8Y-3000 Documentation Set

- 8Y-3000 New Features
- 8Y-3000 Installation and Setup Guide
- 8Y-3000 User's Operation Manual

8Y-3000 New Features

This manual contains information for the 8Y-3000 Distribution Matrix, an advanced 8Y-XL system with the following additional features:

- ❑ 32-bit processor
- ❑ Link to other AutoPatch products with an X^NNet network compatible interface
- ❑ Link to a larger line of X^NNet AutoPatch control accessories
  - – Next Generation SBCs (with real-time status update)
  - – SDU
  - – CP-32
  - – CP-20
  - – CP-10
  - – Precis Remote Panel
- ❑ Controllable via Ethernet, Neuron, RS-232/RS-422, and a variety of X^NNet-based control panels
  - – 10 Base-2 Ethernet interface
  - – Neuron Control network @ 76 Kbps, free topology
  - – Software selectable RS-232 or RS-422
  - – Serial port BAUD rate up to 57600
  - – Serial port Hardware/Software Handshaking
- ❑ New, more powerful, virtual matrix structure and easy configuration via X^NConnect software
- ❑ Individual crosspoint disconnect capability
- ❑ Field upgradeable software
- ❑ Literal switch does not invalidate status
- ❑ Preset request does not invalidate status

Note: The 8Y-3000 processor does not link and communicate with older 8Y-XL processors.

AUTOPATCH

8Y-XL Installation and Setup Guide

8Y-XL

Version B0 905197

CAUTION

To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded before touching any internal materials.

When working with any equipment manufactured with electronic devices, proper ESD grounding procedures must be followed to ensure people, products, and tools are as free of static charges as possible. Grounding straps, conductive smocks, and conductive work mats are specifically designed for this purpose. Anyone performing field maintenance on AutoPatch equipment should utilize an appropriate ESD field service kit complete with at least a dissipative work mat with a ground cord and a UL listed adjustable wrist strap with another ground cord. These items should not be manufactured locally, since they are generally composed of highly resistive conductive materials to safely drain static charges, without increasing an electrocution risk in the event of an accident. ESD protective equipment can be obtained from 3M™, Desco®, Richmond Technology®, Plastic Systems®, and other such vendors.

Important Safety Information and Instructions

When using and installing your AutoPatch product, adhere to the following basic safety precautions. For more information about operating, installing, or servicing your AutoPatch product see your product documentation.

- Read and understand all instructions before using and installing AutoPatch products.
- Use the correct voltage range for your AutoPatch product.
- There are no user serviceable parts inside an AutoPatch product; service should only be done by qualified personnel.
- If you see smoke or smell a strange odor coming from your AutoPatch product, turn it off immediately and call AutoAssist.
- Turn off and unplug an enclosure before adding or removing boards, unless otherwise specified in that product's documentation.
- To avoid shock or potential ESD (Electrostatic Discharge) damage to equipment, make sure you are properly grounded before touching components inside an AutoPatch product.
- For products with multiple power supplies in each unit, make sure all power supplies are turned on simultaneously.
- Use surge protectors and/or AC line conditioners when powering AutoPatch products.
- Only use a fuse(s) with the correct fuse rating in your enclosure.
- Make sure the power outlet is close to the product and easily accessible.
- Make sure the product is on or attached to a stable surface.
- Turn off equipment before linking pieces together, unless otherwise specified in that product's documentation.
- For safety and signal integrity, use a grounded external power source and a grounded power connector.

Information et directives de sécurité importantes

Veuillez vous conformer aux directives de sécurité ci-dessous lorsque vous installez et utilisez votre appareil *AutoPatch*. Pour de plus amples renseignements au sujet de l'installation, du fonctionnement ou de la réparation de votre appareil *AutoPatch*, veuillez consulter la documentation accompagnant l'appareil.

- Lisez attentivement toutes les directives avant d'installer et d'utiliser les appareils *AutoPatch*.
- Le voltage doit être approprié à l'appareil *AutoPatch*.
- Les appareils *AutoPatch* ne contiennent aucune pièce réparable par l'usager; la réparation ne doit être effectuée que par du personnel qualifié.
- Si de la fumée ou une odeur étrange se dégagent d'un appareil *AutoPatch*, fermez-le immédiatement et appelez le Service de soutien technique (*AutoAssist*).
- Fermez et débranchez le boîtier avant d'ajouter ou d'enlever des plaquettes, à moins d'indication contraire fournie dans la documentation du appareil.
- Pour éviter les chocs ou les dommages éventuels causés à l'équipement par une décharge électrostatique, veillez à ce le dispositif oit bien relié à la terre avant de toucher les composantes se trouvant à l'intérieur d'un appareil *AutoPatch*.
- Veillez à ce que tous les blocs d'alimentation des appareils dotés de blocs d'alimentation multiples dans chaque unité soient allumés simultanément.
- Servez-vous de protecteurs de surtension ou de conditionneurs de lignes à courant alternatif lorsque vous mettez les appareils *AutoPatch* sous tension.
- Placez uniquement des fusibles de calibre exact dans les boîtiers.
- Veillez à ce que la prise de courant soit proche de l'appareil et facile d'accès.
- Veillez à ce que votre appareil *AutoPatch* soit installé sur une surface stable ou qu'il y soit fermement maintenu.
- Fermez toutes les composantes de l'équipement avant de relier des pièces, à moins d'indication contraire fournie dans la documentation de l'appareil.
- Par mesure de sécurité et pour la qualité des signaux, servez-vous d'une source d'alimentation externe mise à la terre et d'un connect d'alimentation mis à la terre.

Notices

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No patent liability is assumed with respect to the use of information contained herein.

While every precaution has been taken in the preparation of this publication, AutoPatch assumes no responsibility for error or omissions. No liability is assumed for damages resulting from the use of the information contained herein.

Further, this publication and features described herein are subject to change without notice. The United States Federal Communications Commission (in 47CFR 15.838) has specified that the following notice be brought to the attention of the users of this product.

Federal Communication Commission Radio Frequency Interference Statement:

"This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturers instructions, may cause interference to radio and television reception. It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However there is no guarantee that interference will not occur in a particular installation. If this equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient the receiving antenna*
- *Relocate the matrix with respect to the receiver*
- *Move the matrix away from the receiver*
- *Plug the matrix into a different outlet so that computer and receiver are on different branch circuits*

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the booklet, How to Identify and Resolve Radio-TV Interference Problems, prepared by the Federal Communications Commission to be helpful."

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock N. 004-000-00345-4.

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Use shielded cables. To comply with FCC Class B requirement, all external data interface cables and adapters must be shielded.

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AutoPatch
Statement of Warranty

AutoPatch, a division of X^N Technologies, Inc., Cheney, Washington, warrantees that the products manufactured by AutoPatch will be free of defects in materials and workmanship for the lifetime of the product, subject to the following terms and conditions.

Terms and Conditions

1. AutoPatch products are under warranty for a period of five (5) years following the original sales invoice date. The warranty period may be extended to the life of the product provided the warranty card is filled out and returned to AutoPatch. TO VALIDATE THE LIFETIME WARRANTY: THE AutoPatch WARRANTY CARD MUST BE FILLED OUT BY THE DEALER AND RECEIVED BY AutoPatch WITHIN THIRTY (30) DAYS OF THE INSTALLATION OF EQUIPMENT BUT NO LATER THAN ONE (1) YEAR FROM THE ORIGINAL SALES INVOICE DATE. A warranty certificate will be returned to the dealer to verify the warranty period.

2. This Limited Lifetime warranty covers AutoPatch products shipped on or after October 1, 1997. The Limited Lifetime warranty applies to products in the original installation only. If the product is moved to a different installation, the Limited Lifetime warranty will no longer apply and the product warranty will revert to the original warranty which covers a period of five (5) years following the original sales invoice date.

3. The product lifetime is defined as the period of time from the original sales invoice date to ten (10) years after AutoPatch ceases manufacturing the product model.

4. Warranty repairs are accomplished by returning the subassembly to AutoPatch for repair. If conditions do not permit this procedure, AutoPatch will invoice new or reconditioned (at AutoPatch's option) replacement parts and ship them to the dealer or to the customer if so directed by written order from the dealer. In that case the replacement will be billed to the customer and the customer may return the failed subassembly within 30 days for credit. See "AutoPatch Returns Policy" in this manual for replacement policies and procedures.

5. **AutoPatch's liability and Buyer's remedies under this warranty shall be limited solely to repair, replacement, or credit, at AutoPatch's option.**

6. The AutoPatch warranty does not apply to any AutoPatch product that has been modified, repaired by an unauthorized agent, or improperly installed, used, or maintained. AutoPatch shall not be liable under any circumstances for consequential or incidental damages including, but not limited to, labor costs or loss of profits arising in connection with the use of or inability to use AutoPatch products.

7. AutoPatch will not be responsible for items damaged during shipment to or from AutoPatch. The shipping carrier is responsible for items damaged during shipment.

8. This warranty is exclusive and in lieu of any other warranty, expressed or implied, including but not limited to any implied merchantability or fitness for a particular purpose. The terms of this warranty are governed by the laws of the state of Washington; certain other states restrict warranty limitations. You may have rights that are not defined herein.

9. This warranty may not be modified except in writing by an authorized AutoPatch officer.

Contents

Welcome

Installer's Product Notes ii
Meet the Manual. iii
Terms to Know iv
Technical Support v

Chapter 1 – Unpacking the 8Y-XL

Front of the Enclosure 1-2
CP-10 Control Panel. 1-3
Rear of the Enclosure 1-6

Chapter 2 – Placing the Enclosure(s)

Chapter 3 – Linking Enclosures

Chapter 4 – Attaching Inputs and Outputs

Attaching Input and Output Cables 4-2
Paralleling Inputs. 4-4

Chapter 5 – Attaching an External Controller

Chapter 6 – Applying Power and the Startup Sequence

Applying Power 6-2
Startup from the CP-10 Control Panel. 6-2
Startup from a Control Device 6-3

Chapter 7 – Executing a Test Switch

Executing a Test Switch Using CP-10 Control Panel. 7-2
Executing a Test Switch Using BCS Commands 7-4

Chapter 8 – Managing Configuration Files

Conceptual Overview 8-2
Installing and Launching 8-2
Panes, Views, and Dialog Boxes. 8-3
Opening and Downloading a Configuration File. 8-4
Modifying Configuration Files 8-5
Configuring Local Presets. 8-5
Modifying Groupings. 8-8

Chapter 9 – Adjusting Gain

Chapter 10 – Adding Hardware

Adding Boards 10-2
Input and Output Boards 10-2
Vertical Interval Timing Board. 10-3
Adding Enclosures 10-5

Appendix A – AutoPatch Service and Returns Policy

Service. A-1
Return Authorizations A-1
Claims for Shipping Damages A-1
Replacement Policies and Procedures A-2
Special Notice A-3

Appendix B – Product Specifications

General B-1
Analog Audio B-2
Standard Audio Boards. B-2
Analog Video B-3
Standard Video Boards. B-3
Wideband Video Boards B-4
Ultra-wideband Video Boards. B-5

Appendix C – BCS (Basic Control Structure) Commands

Glossary

Index

Welcome

Welcome to the *8Y-XL Installation and Setup Guide*. This book is the first part of a three document set:

Installation and Setup Guide – compiled for the technician installing the system.

User's Operation Manual – created for the end-user who operates the system.

Quick Reference Guide – a companion to the User's Operation Manual.

The 8Y-XL Installation and Setup Guide is designed to provide the installation technician with quick, easy-to-follow instructions for installing an 8Y-XL and preparing it for operation.

The 8Y-XL User's Operation Manual does not include any detailed information about SBCs (Single Bus Controllers) for the 8Y-XL. Call AutoAssist for more information about this controller type (see Technical Support*, p. v).*

Installer's Product Notes

An 8Y-XL Distribution Matrix can stand alone or comprise a virtually unlimited number of linked enclosures, including any other AutoPatch products with an X^NNet network compatible interface. Each 8Y-XL enclosure can hold up to 8 input and 8 output boards and each board can have up to 8 connectors, for a total capacity of 64 inputs and 64 outputs per enclosure.

8Y-XL Distribution Matrices fit in a broad range of audio/video environments and are controllable from a variety of sources, including a CP-10 Control Panel, a CP-10 Remote Control Panel, any control device that can send ASCII characters through an RS232 or RS422 serial cable, a third party serial controller*, a PC, or a Single Bus Controller*.

Tools for Installation:

- ❑ A laptop computer with an RS232 or RS422 null modem cable (communication with the 8Y-XL via a serial port for programming and fault isolation)
- ❑ The AutoPatch Configuration Software set (which includes copy of the configuration file) shipped with the system
- ❑ The full set of user documentation shipped with the system

*These control devices are not covered in this document.

Meet the Manual

This manual contains 10 chapters and 3 appendices. The information in this manual progresses from unpacking the 8Y-XL in Chapter 1 to BCS (Basic Control Structure) commands in Appendix C. Use the following chapter descriptions to guide you through the manual.

Title	Description
Chapter 1 Unpacking the 8Y-XL	➤ Items included in shipping and unpacking tips ➤ Description of the enclosure's physical features
Chapter 2 Placing the Enclosure(s)	➤ List of tools needed for installation ➤ Steps for placing the enclosure(s)
Chapter 3 Linking Enclosures	➤ Information on linking enclosures
Chapter 4 Attaching Inputs and Outputs	➤ Directions for attaching input and output cables ➤ Directions for paralleling inputs
Chapter 5 Attaching an External Controller	➤ Directions for attaching an external control device to an enclosure
Chapter 6 Applying Power and the Startup Sequence	➤ Directions for applying power ➤ Startup sequence from the CP-10 Control Panel ➤ Startup sequence from a serial control device
Chapter 7 Executing a Test Switch	➤ Directions for executing a test switch from the CP-10 Control Panel ➤ Directions for executing and disconnecting a test switch using BCS commands
Chapter 8 Managing Configuration Files	➤ Conceptual overview and screen description of X^NConnect ➤ Directions for installing and launching X^NConnect ➤ Directions for opening and downloading configuration files ➤ Directions for modifying configuration files
Chapter 9 Adjusting Gain	➤ Directions for adjusting gain
Chapter 10 Adding Hardware	➤ Directions for adding boards and enclosures to expand system switching capabilities
Appendix A AutoPatch Service and Returns Policy	➤ Details regarding AutoPatch Service and Returns policies
Appendix B Product Specifications	➤ Technical specifications and performance information
Appendix C BCS (Basic Control Structure) Commands	➤ BCS characters, functions, and descriptions in chart format
Glossary	➤ Definitions of terms as they are used in this manual
Index	➤ Index of subjects by features and tasks

Terms to Know

Before jumping into the technical details of this manual, you should be familiar with the following terms:

Basic Control Structure (BCS)

BCS is a set of alphanumeric characters that combine to form command lines. Use BCS to control a system from any serial device that allows you to enter characters, such as a PC (personal computer).

Configuration File

A configuration file is a text file containing system configuration information referenced by each enclosure's CPU during any type of switch operation. *If a system has multiple enclosures linked together, configuration information uploaded to any 8Y-XL enclosure is automatically shared with the rest of the linked enclosures in the system.*

CP-10 Control Panel

The CP-10 Control Panel is attached to each enclosure and is designed for system control of the 8Y-XL Distribution Matrix.

ESD

Electrostatic Discharge (ESD) refers to electrical charges (such as static electricity) that can damage sensitive components inside an enclosure. The graphic to the left of this definition precedes every procedure where ESD damage could occur if you are not properly grounded and not handling components correctly (see the *Caution* page inside the front cover of this guide for more details about ESD).

Input and Output Connectors

Input and output connectors are on the rear of an enclosure. Input and output signal cables attach to the input and output connectors. Standard 8Y-XL audio and data connectors are 3-position terminal block; video and sync connectors are BNC.

Level

A level is a set of input and output signals that are grouped and, therefore, switch together. In a configuration file, a level is referred to as a "virtual matrix."

Signal

A signal can be analog audio, analog video, serial digital, sync information, or other types. A signal (also called an input or output signal) comprises of a set of connectors whose signals switch together, such as an "RGB" signal. To route a specific input (source) signal to a specific output (destination) device, the input and output signals must be of the same signal type and share the same level designation.

Switch

A switch is an active connection between an input (source) signal and one or more output (destination) devices.

X^{N}Connect

X^{N}Connect is graphical software program that displays your most recent configuration and allows easy addition of local presets and modification of other configuration information (see the X^{N}Connect Help file for assistance).

X^{N}Net

X^{N}Net is an internal communication protocol that requires software driver support for Ethernet and Neuron® interfaces.

Technical Support

AutoPatch provides technical support 24 hours a day, 7 days a week (except for U.S. holidays). Before calling with a question, please consult the 8Y-XL documentation. If these manuals cannot fully answer your question, *have your serial number (located on the plate between the input and output connectors on the rear of the enclosure) ready* and call your authorized AutoPatch dealer or call AutoPatch AutoAssist at: (toll free for U.S. and Canada) **800-622-0246** or (international) **509-235-2636**. You can also reach us through our web site: **www.autopatch.com**, or e-mail our AutoPatch Technical Support Specialists at: **support@autopatch.com**.

Unpacking the 8Y-XL

The 8Y-XL is shipped with one enclosure in each shipping box. Each box contains one of each of the following items (invoices are sent separately):

- ❑ Power cords (one per enclosure)
- ❑ Enclosure

The shipping boxes are marked as "Box #_of_," where the first blank is the box number and the second blank is the total number of boxes in the shipment. Box #1 contains several additional items:

- ❑ Packing list
- ❑ Installation and Setup Guide
- ❑ User's Operation Manual
- ❑ Quick Reference Guide (inside binder)
- ❑ AutoPatch 8Y-XL Connector and Groupings Guide
- ❑ AutoPatch Configuration Software set
- ❑ Link cable (included with multi-enclosure systems)
- ❑ Other enclosure products

Unpacking Tips

- ❑ Before fully unpacking the enclosure(s), *examine the shipping box(es) for any signs of damage*. If a box is partially crushed or any sides have been broken open, notify the shipping agency immediately and contact your AutoPatch Salesperson or Representative.
- ❑ Once unpacking is complete, closely check the physical condition of the enclosure(s).
- ❑ Collect all documentation and envelopes.

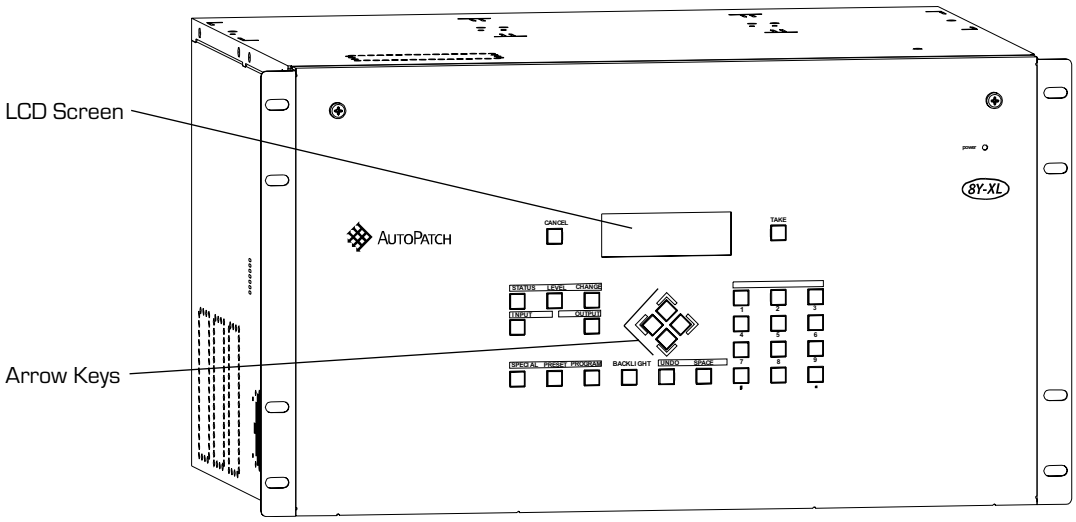
Note: AutoPatch is not responsible for damage caused by insufficient packing during *return* shipment to the factory. Upon request, AutoPatch will supply new shipping boxes at cost.

1.1 Front of the Enclosure

Enclosures are the structural basis of an 8Y-XL Distribution Matrix. Since AutoPatch matrix switchers are custom-built for each installation, factors such as control method, signal type, and potential switches affect the appearance and weight of each enclosure.

An enclosure can have a blank front panel or a CP-10 Control Panel (a front panel that is produced by AutoPatch and has an LCD screen and keys for entering commands). Although a CP-10 Control Panel is optional, we recommend one on at least one enclosure in the system for system verification, redundant control, and troubleshooting. The CP-10 Control Panel can be attached or removed as needed.

CP-10 Control Panel



Front view of an 8Y-XL enclosure with a CP-10 Control Panel

A CP-10 Control Panel has 29 keys – 10 number keys for entering digits, 4 directional arrow keys, and 1 each of the following: Cancel, Take, Status, Level, Change, Input, Output, Preset, Program, Backlight, Space, Special, Undo, Comma, and Period (the last four are not implemented).

- **To use the CP-10 Control Panel**, use the keys to choose commands and values from the Command Screen.
- **To choose a command,** push the key that corresponds with the one you want to choose.
- **To select values for fields (such as Level, Source, Destination, and Preset values),** use the number keys.

Number Keys (0-9)

Use the number keys to enter digits when choosing front panel menu items (instead of scrolling down the lists), entering input, output, and local preset numbers, and entering digits for any other functions that may require numbers.

Arrow Keys

Use the arrow keys to scroll left and right through long lists of outputs. The arrow keys are required only when an arrow graphic is displayed on the front panel's LCD screen.

Cancel Key

Use the Cancel key to abort a command that is incomplete. If you make a mistake while entering a command, press the Cancel key to remove the partially entered command from the screen and enter the correct command. The Cancel key cannot undo a completed operation.

Take Key

The Take key is much like the Enter or Return key on a computer keyboard. Pressing the Take key tells the system to execute the chosen or entered command.

Status Key

Use the Status key to query the system for signal routing information and switch verification.

Level Key

The Level key prepares the system to receive a level identification number as the next entry.

Change Key

Use the Change key to switch signals. Press the Change key and the Change menu appears, prompting you for information about the switch you want to perform.

Input Key

The Input key prepares the system to receive an input identification number as the next entry.

Output Key

The Output key prepares the system to receive an output identification number as the next entry.

Preset Key

Use the Preset key to implement a local preset.

Backlight Key

The Backlight key illuminates the LCD. The backlight remains illuminated for approximately 20 seconds; however, you can turn it off before the 20 seconds are up by pressing the key again.

Space Key

Use the Space key to insert a space between multiple outputs or multiple local presets when entering a command; the output and local preset prompts are the only prompts that accept multiple entries.

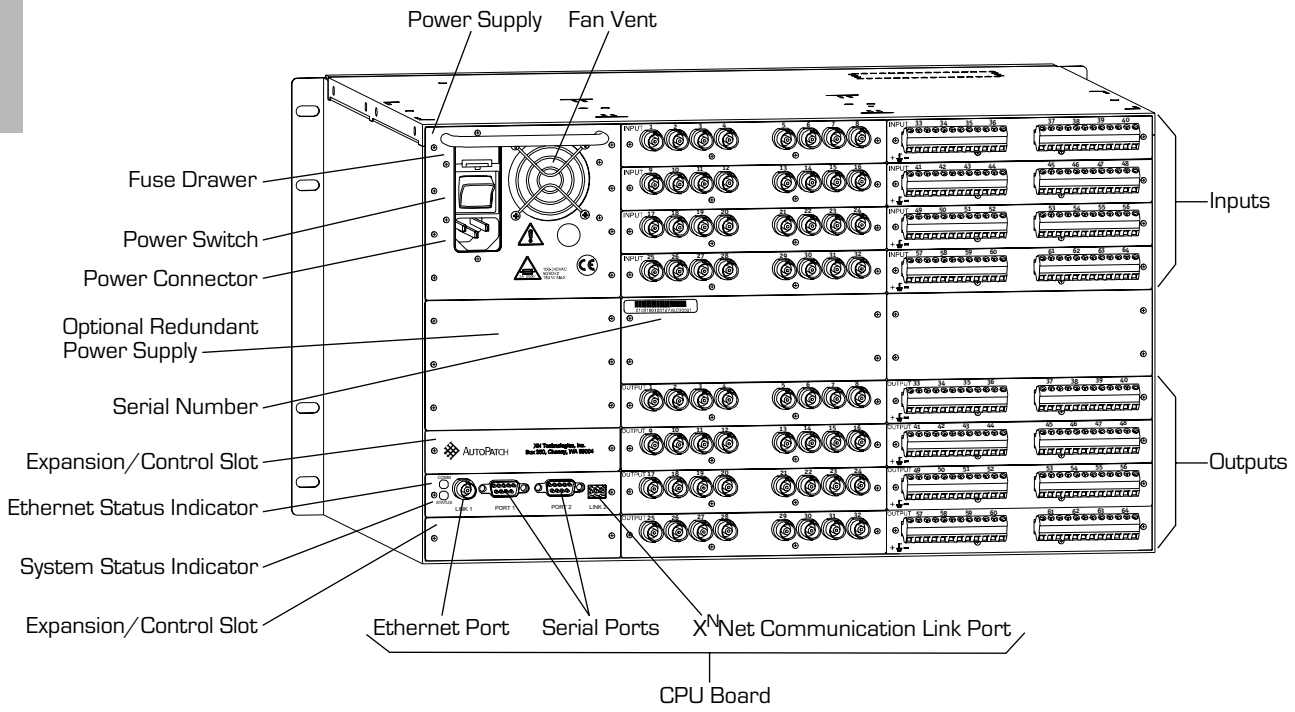
Special, Program, Undo, Comma (,), and Period (.) Keys

These keys are not implemented at this time.

1.2 Rear of the Enclosure

All the enclosure's connectors (input and output, X^NNet, serial, Ethernet, and power) are on the rear of the enclosure. Audio and video input and output connectors, the CPU, expansion/control slots, the power supply, (AC powered entry), and the serial number are all on the rear of the enclosure.

The following segments briefly introduce the hardware on the rear of an enclosure.



Input and Output Connectors

Input and output connectors are the attachment points for devices that connect to the system. The inputs (sources) are on the top of the enclosure, to the right of the power supply, and the outputs (destinations) are on the bottom of the enclosure, to the right of the CPU. A single enclosure can handle a combination of analog audio, analog video, digital video, and sync signals.

CPU

The CPU is in one of the expansion/control slots to the left of the output connectors and has connectors (ports) for attaching external control devices. The CPU also has a system status light, a network use light (Ethernet Status indicator), and ports for linking to other enclosures.

Expansion/Control Slots

Each enclosure provides three expansion/control slots. One contains the CPU board and two are for future boards that will increase functionality and add new features to your system. One is located above the CPU and one is below it.

Power Supply

The power supply is on the top left corner of the rear of the enclosure. The power supply holds the power switch, power connector, and fuse drawer. The power supply fan vent is to the right of the power supply unit.

The 8Y-XL input voltage range is AC 100-240V single phase. The power supply will accept all major, international, standard power sources (see page B-1 for power supply specifications).

The fuse drawer is just above the power switch and contains two 2 AMP Time Delay (5mm x 20mm) fuses.

Press the “0” side of the power switch to turn power off; press the “1” side to turn it on.

We recommend surge protectors and/or an AC line conditioner.

Serial Number

The serial number for the system is located on the plate between the input and output connectors.

Placing the Enclosure(s)

You can install 8Y-XL enclosures in a standard EIA 19 in. (48.26 cm) rack. To hold enclosures in place, they are shipped with rack installation ears already attached.

To make control panel operations easier, mount the enclosure with the CP-10 Control Panel attached in the rack at eye level. The optimum viewing angle for the LCD screen is 15°. Install a multi-enclosure system with all the enclosures linked, so control information can travel between them.

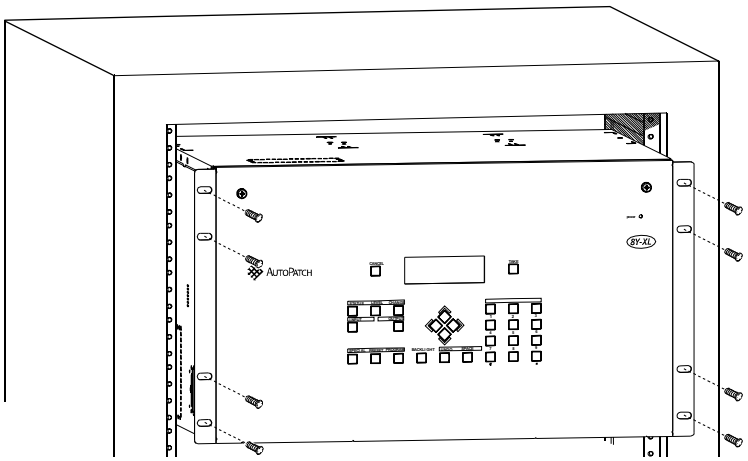
Caution: Avoid placing high heat-producing equipment directly above or below the enclosure(s). 8Y-XL enclosures are designed to adequately dissipate the small amount of heat they produce under normal operating conditions; however, this design is defeated when high heat-producing equipment is placed directly above or below the enclosure(s).

Tools you will need to place enclosure(s):

- ❑ Screwdriver
- ❑ Screws that fit your rack [for mounting the enclosure(s)]
- ❑ Link cables (included with multi-enclosure systems, otherwise not needed)
- ❑ Enclosure(s)
- ❑ Standard EIA 19 in. (48.26 cm) rack
- ❑ Surge protector(s) – highly recommended

To install an enclosure in a rack:

1. Place the enclosure in the rack and attach front-mounting screws to hold it firmly in place (repeat for each enclosure). You may find it easiest to install the top enclosure first and move down from there.



2. If you have a multi-enclosure system, link the enclosures. See Chapter 3, "Linking Enclosures."
3. Following the 8Y-XL Connector and Groupings Guide, attach only the first two input and output signals to the correct input and output connectors on the rear of the correct enclosure. See Chapter 4, "Attaching Inputs and Outputs."
4. Attach power to each enclosure and turn on the entire system. See Chapter 6, "Applying Power and the Startup Sequence." WE RECOMMEND SURGE PROTECTORS AND/OR AN AC LINE CONDITIONER
5. Perform a test switch to ensure the system is working properly. See Chapter 7, "Executing a Test Switch."
6. When the test switch works correctly, attach all the input and output cables to the correct input and output connectors on the rear of each enclosure. Refer to Chapter 4, "Attaching Inputs and Outputs" and the "8Y-XL Connector and Groupings Guide."
   If the test does not work correctly, see Chapter 7, “Executing a Test Switch.”

Linking Enclosures

An 8Y-XL enclosure can connect to other enclosures and any other AutoPatch product with an X^NNet compatible interface. You can link enclosures to products using any of the ports on the CPU; however, serial port linking requires a special configuration file. We recommend linking enclosures via the Ethernet ports.

Link enclosures in a multi-enclosure system so that control information can pass between them.

Link Port	Cable Type	Space between Enclosures (max)
Ethernet (these cables are included with multi-enclosure systems)	RG-58	492 ft. (150 m)
X^NNet	16 gauge twisted pair	492 ft. (150 m)

In a multi-enclosure system with an external controller, the enclosure connected to the control device receives all control information and passes on relevant information to other enclosures via the links. An 8Y-XL can have a virtually unlimited number of linked enclosures.

When linking enclosures within a system, we recommend connecting them with the Ethernet ports for consistent control speed.

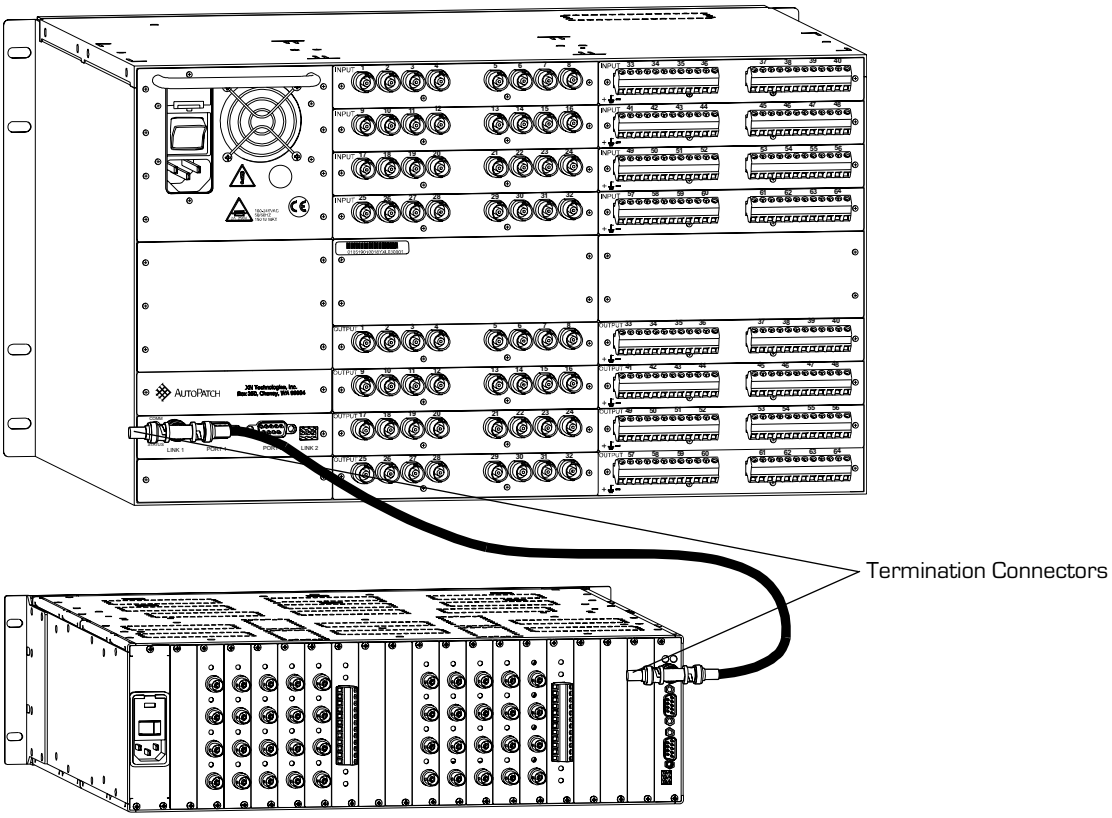
Note: If any of the linked enclosures were not in your original system, you need a new configuration file (call AutoAssist; see *Technical Support*, page v).

You can link 8Y-XL enclosures using link cables and the connectors on the CPU (see the linking diagrams on the following pages).

Note: Termination connectors are required on the open ends of all "T" connectors when linking enclosures.

To link an 8Y-XL enclosure to a Modula enclosure using Ethernet link connectors:

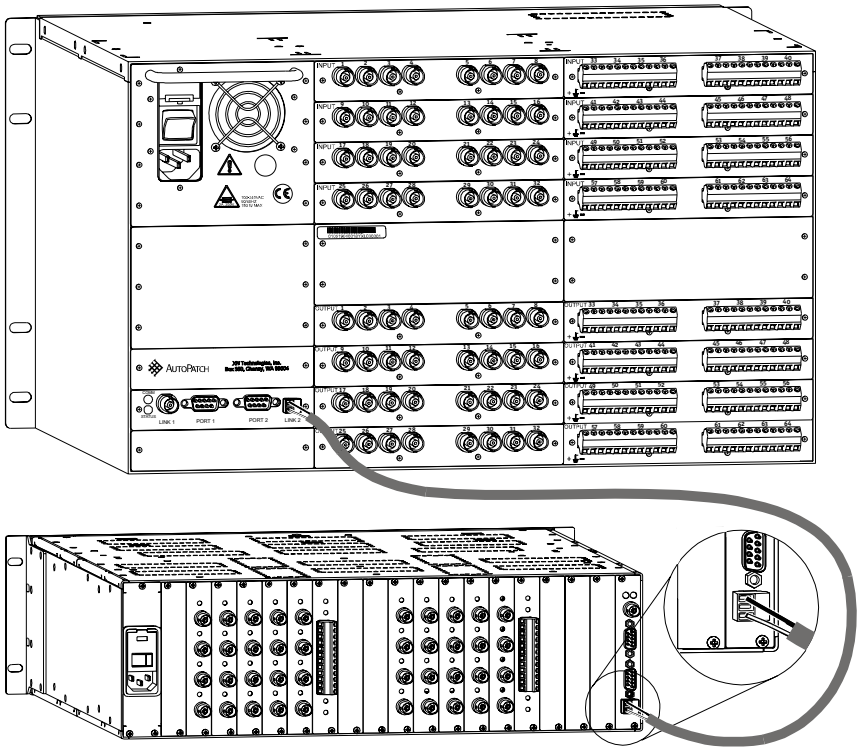
1. Fasten "T" connectors to the Ethernet ports on both enclosures.
2. Fasten the connectors on the ends of the Ethernet link cable onto the "T" connectors. Add termination connectors as shown in the graphic below.



Link enclosures using Ethernet connectors

To link an 8Y-XL enclosure to a Modula enclosure using the X^{N}Net Communication link connectors:

1. Insert the wires on one end of the link cable into the X^{N}Net terminal block on the first enclosure as shown in the graphic below.
2. Insert the wires on the other end of the link cable into the X^{N}Net terminal block on the second enclosure in the same way as in step one.



Link enclosures via their X^{N}Net Communication link ports

Attaching Inputs and Outputs

Inputs and outputs attach to the input and output connectors on the rear of each enclosure. Inputs attach to the connectors on the upper part of the enclosure, and outputs attach to the connectors on the lower part of the enclosure. The input and output connectors are numbered separately. The numbering starts at the top left and goes across two connectors. This pattern repeats downward to the bottom of the section and then continues from the top on the remaining two sets of connectors on the right.

Connectors on an 8Y-XL enclosure could include:

Signal Type	Connector Type
Analog audio (balanced or unbalanced)	Pluggable 3 position terminal block
Digital audio	BNC
Analog video	BNC
Digital video	BNC
Sync	BNC

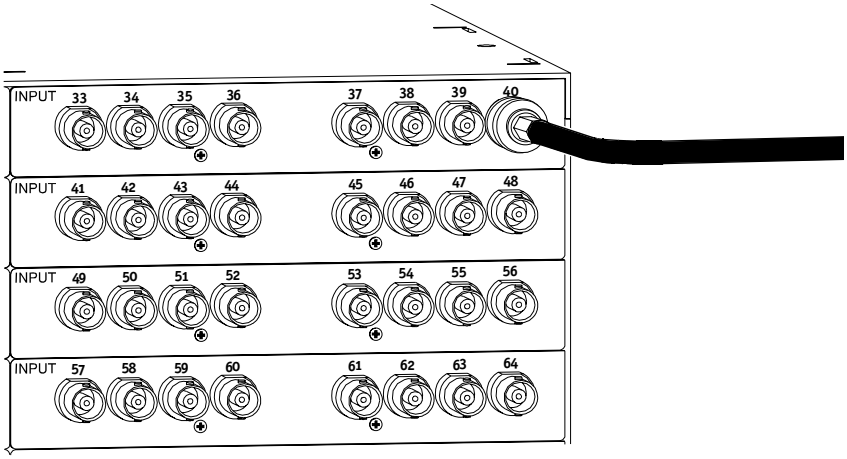
4.1 Attaching Input and Output Cables

When attaching input and output signal cables, refer to the sheet labeled "AutoPatch 8Y-XL Connector and Groupings Guide" that was included in the shipping box(es). The sheet shows you where to attach each signal cable on the rear of each enclosure. *Follow the sheet exactly; the system was programmed at the factory to operate only as indicated on the sheet.*

Note: Before connecting all signal cables, attach only the first two inputs and outputs from the "AutoPatch 8Y-XL Connector and Groupings Guide," and then perform a test switch to verify that the system is working properly. See Chapter 7 for details on performing a test switch.

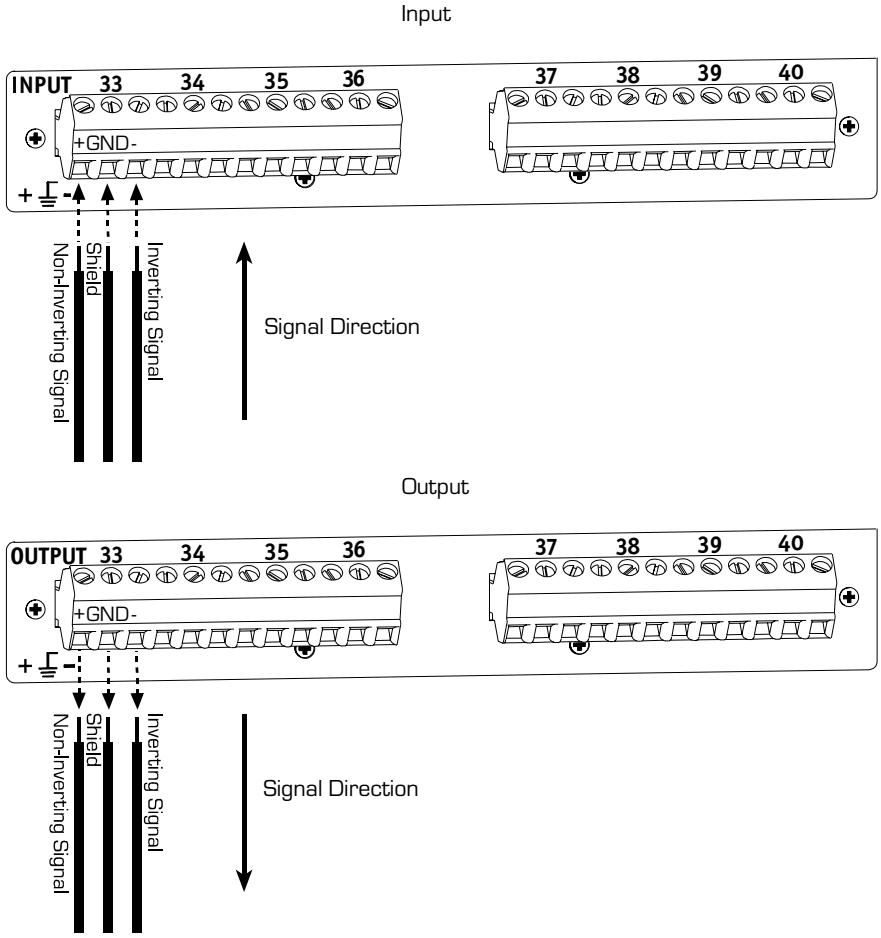
To attach video inputs and outputs, slide the video cable onto the input or output connector (see graphic below).

Make sure video signals are attached to video connectors and sync signals are attached to sync connectors. The connectors look identical, but the “Connector and Groupings Guide” identifies them.



Attach a video cable to a BNC connector

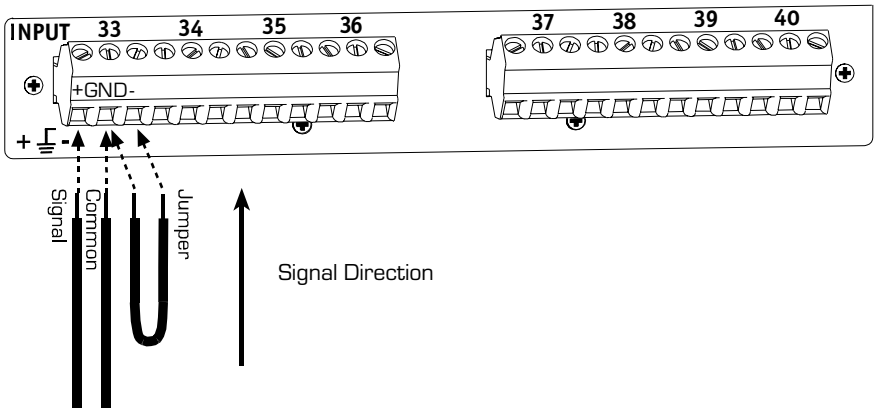
To attach audio inputs and outputs, unscrew the clamps on the audio connector, insert the proper wire, and re-tighten the clamps so they hold the wire tightly and make proper connections. The graphic below shows balanced audio connections, and the graphic on the next page shows unbalanced audio connections.



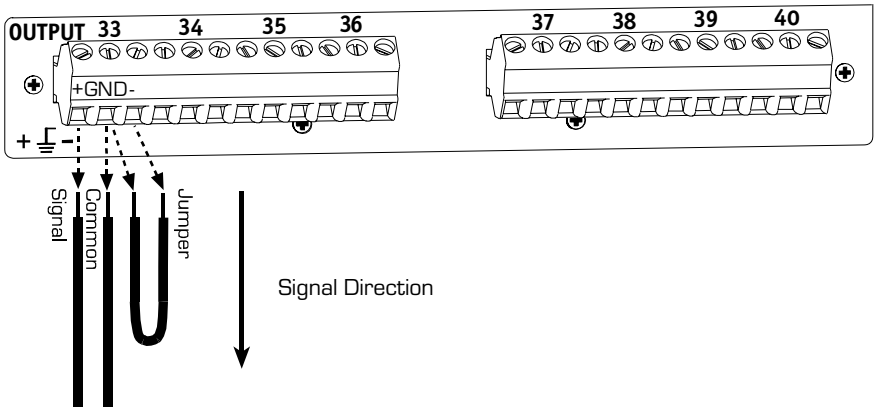
Balanced audio connections

Note: For audio signals using twisted pair wire, connect the shield only at one end to minimize low frequency noise.

Input



Output

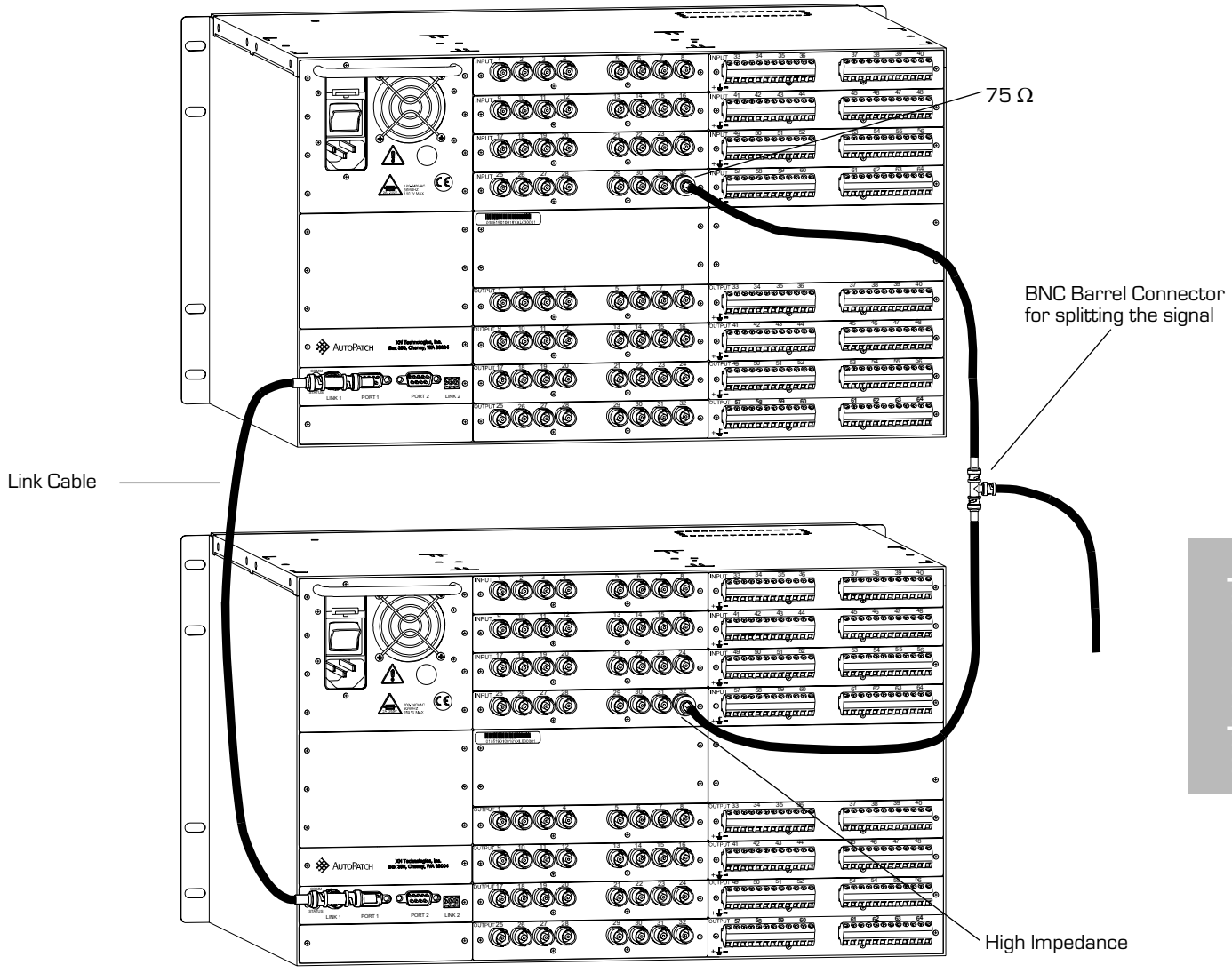


Unbalanced audio connections

4.2 Paralleling Inputs

Caution: Make sure the matrix's configuration file reflects any changes made to the I/O connectors of an enclosure. To parallel inputs, the matrix must be equipped with high impedance I/O boards.

Each enclosure in an 8Y-XL is its own switching environment, so the inputs of one enclosure cannot be switched to the outputs of another. However, by paralleling inputs between multiple enclosures, a signal can be routed on all of the enclosures where it is attached. Paralleling inputs expands the matrix's signal routing possibilities up to 64x256.



Split the input signal when paralleling inputs

To parallel inputs, split an input signal between two or more input connectors on different enclosures.

To minimize signal degradation when splitting a video input signal, make sure the matrix is equipped with high impedance I/O boards. With the exception of one board, all of the boards among which the signal is split must be high impedance. For example, in the system pictured on the previous page, the I/O board in the top enclosure should be 75 and the board in the bottom enclosure should be high impedance. You can order high impedance boards from AutoPatch.

Caution: Do not split an input signal between more than four connectors without a line amplifier.

Attaching an External Controller

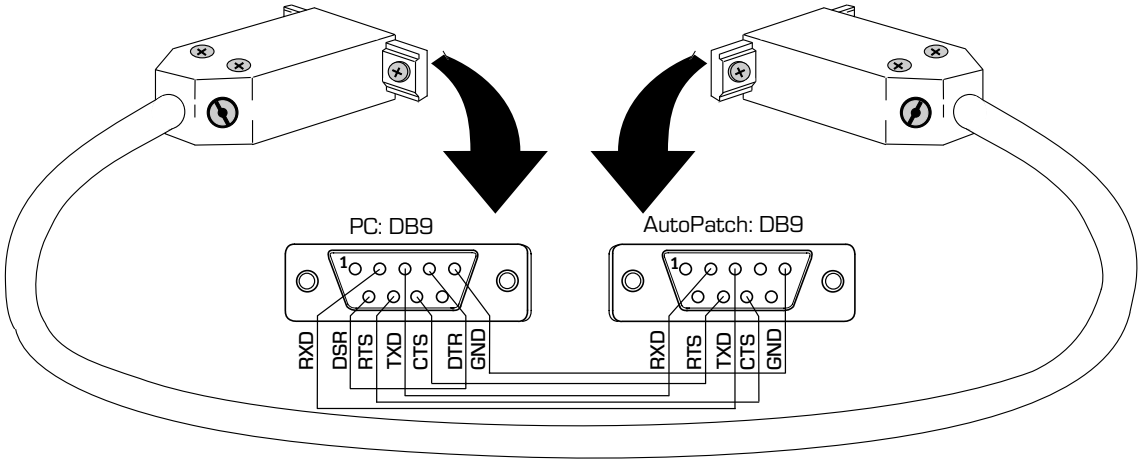
The 8Y-XL can be controlled with external controllers using two types of communication protocols:

- **Serial, BCS (Basic Control Structure)** – serial ports
- **X^{N}Net*** – all ports (including serial)

Control systems and panels (such as SBCs* and remote control panels*) usually connect to the X^{N}Net connector. Third party controllers and PCs usually connect to the serial connector. We recommend using the Ethernet connector for linking enclosures.

*These controllers are not covered in this document.

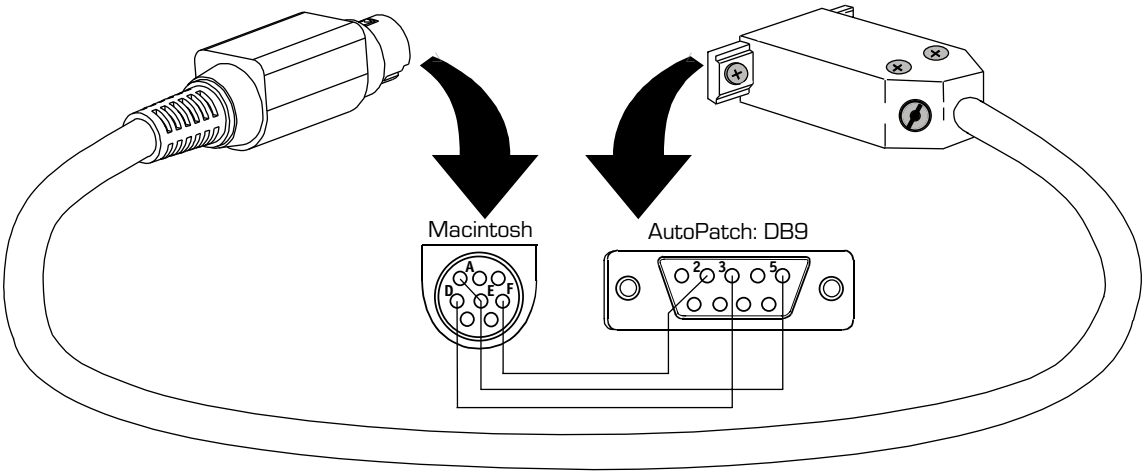
A serial controller is any device that can send and receive ASCII code via RS232 or RS422. You can connect a serial controller to either of the two serial connectors on an enclosure's CPU board. Connect serial controllers with either standard RS232or RS422 connections (refer to the following graphics for RS232 and RS422 cable connector pin mappings).



RS232 pin diagram

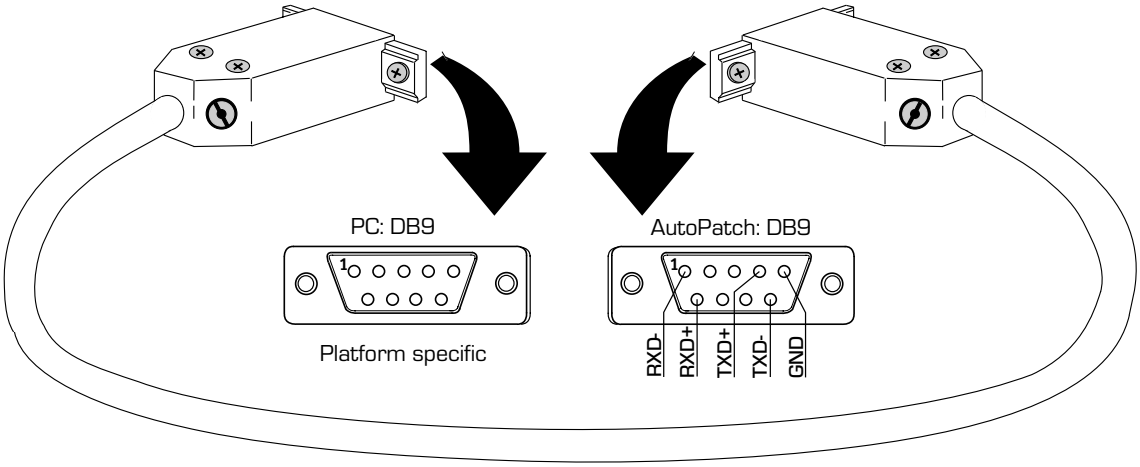
PC: DB9	AutoPatch: DB9
GND #5	GND #5
RXD #2	TXD #3
TXD #3	RXD #2
RTS #7	CTS #8
CTS #8	RTS #7
DSR #6	DTR #4

The pin diagram above allows for hardware flow control. If this type of control is not needed, connect pin #7 to pin #8 on the PC's connector.



RS232 pin diagram for a Macintosh computer

Macintosh	AutoPatch: DB9
A&E	5
D	3
F	2



RS422 pin diagram

AutoPatch: DB9

GND #5
RXD+ #6
RXD- #1
TXD+ #4
TXD- #9

When controlling the system with a PC, use serial communication software and make sure the BAUD rate is set correctly for the system. Available BAUD rates for 8Y-XL systems are 9600, 19200, 38400 and 57600; the default is 9600.

Recommended settings (also default settings) for serial communication with an 8Y-XL are:

BAUD	9600
Data Bits	8
Stop Bit	1
Parity	NONE

Note: Make sure the settings on both the PC serial communication software and the CP-10 Control Panel correspond to each other.

Applying Power and the Startup Sequence

Your 8Y-XL ships with power cords that are compatible with your country's power sources. Always use an earth-grounded power cord/system with this matrix switcher.

The system's universal power supplies will accept all major, international, standard power sources (see page B-1 for power supply specifications).

WE RECOMMEND ATTACHING ALL POWER CORDS TO A SINGLE SURGE PROTECTOR AND/OR AN AC LINE CONDITIONER.

6.1 Applying Power

To apply power:

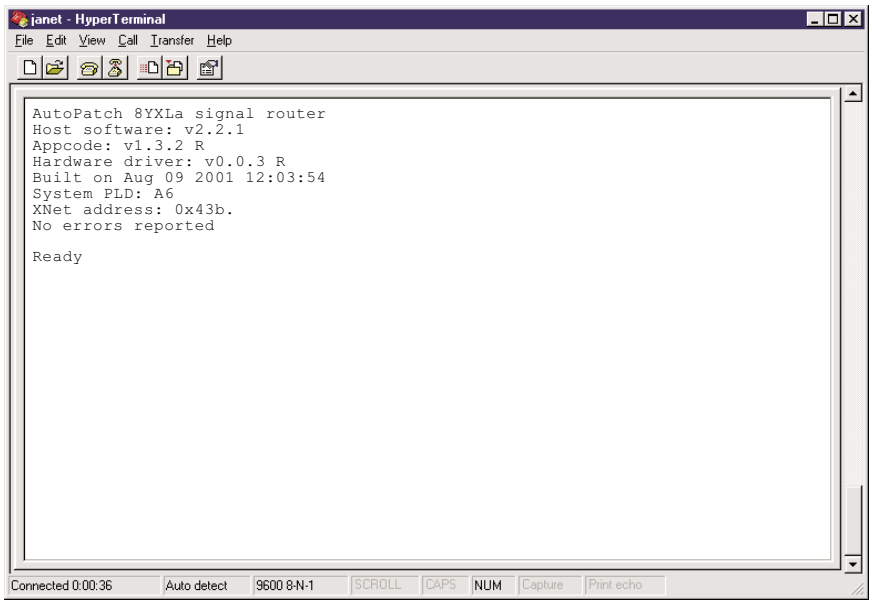
1. Plug each enclosure into a power source.
   WE RECOMMEND SURGE PROTECTORS AND/OR AN AC LINE CONDITIONER.
2. Press the “1” side of the power switch to turn it on.

6.2 Startup from the CP-10 Control Panel

After applying power and turning on the enclosure(s), the CP-10 Control Panel displays the Command screen. The system is ready for a test switch (see Chapter 7, "Executing a Test Switch").

6.3 Startup from a Control Device

After applying power and turning on the enclosure(s), the splash screen displays startup diagnostic information, followed by "`Ready`." If you need details regarding items on the screen or if errors are reported, call AutoAssist (see *Technical Support*, page v). A sample splash screen for an 8Y-XL is shown below. The system is ready for a test switch (see Chapter 7, "Executing a Test Switch").



Startup information in HyperTerminal

7 Executing a Test Switch

Execute a test switch to verify the system is working properly before attaching *all* inputs and outputs. Aside from having signal cables attached, the system is ready to perform switches when it ships from the factory.

You can execute a test switch from the following:

- CP-10 Control Panel
- An external serial controller (computer, AMX, Crestron, etc.) via BCS (Basic Control Structure) commands

Note: Before executing a test switch, attach only the first two inputs and outputs described in the AutoPatch "8Y-XL Connector and Groupings Guide" that came with your system.

The CP-10 test switch example (see page 7-2) routes input 2 to output 1 on Level 0 (your system may have been programmed with a different level). The BCS Command test switch (see page 7-4) routes input 1 to output 2 on Level 0. Before executing these switches, make sure the first two inputs and outputs are connected exactly as shown on the AutoPatch "8Y-XL Connector and Groupings Guide."

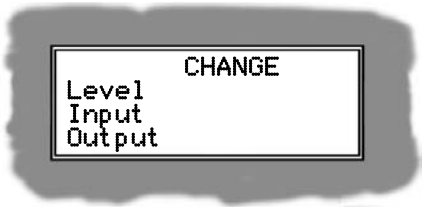
7.1 Executing a Test Switch Using the CP-10 Control Panel

The following test switch routes Input 2 to Output 1 on Level 0. Before executing these switches, make sure the first two inputs and outputs are connected exactly as shown on the AutoPatch "8Y-XL Connector and Groupings Guide."

To execute a test switch using the CP-10 Control Panel:

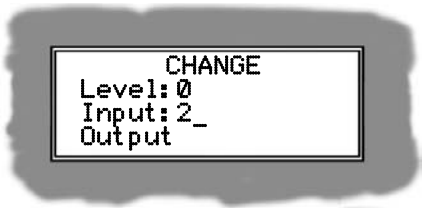
1. At the Command screen, press the Change key.

   The Change screen appears.

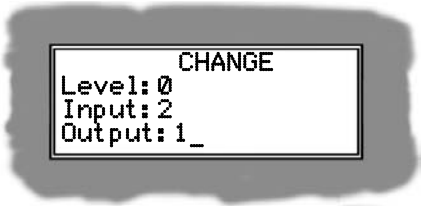


2. Press the Level key and enter "0" (your system may have been programmed with a different level).

3. Press the Input key and enter "2."



4. Press the Output key and enter “1.”



5. Press Take key.

The signal is routed and the Command screen appears.

If the switch did not execute properly:

- ❑ Check all power switches to make sure the source and destination devices are turned on.
- ❑ Check all link and signal connections on the rear of the enclosure(s) to make sure everything is physically set up correctly.
- ❑ Attempt the switch again.

If the switch still does not work, call AutoAssist (see *Technical Support*, page v).

7.2 Executing a Test Switch Using BCS Commands

The following test switch routes Input 1 to Output 2 on Level 0. Before executing these switches, make sure the first two inputs and outputs are connected exactly as shown in the AutoPatch "Modula Connector and Groupings Guide."

To execute a test switch, enter the following BCS command line into a serial terminal program attached to the matrix:

```
CL0I1O2T
```

For a complete list of BCS commands, see Appendix C in the back of this guide.

If the switch did not execute properly:

- ❑ Check all power switches to make sure the source and destination devices are turned on.
- ❑ Check all link and signal connections on the rear of the enclosure(s) to make sure everything is physically set up properly.
- ❑ Attempt the switch again.

If the switch still does not work, call AutoAssist (see *Technical Support*, page v).

8 Managing Configuration Files

A configuration file is a text file that contains system configuration information that has been previously downloaded to the CPU in your matrix switcher before shipment. Each enclosure's CPU references this information during any type of switching operation. Unless you need to modify your system, you will not need to use any of the software set that is included in shipping. A copy of the configuration file is in the \MyXCL folder on the AutoPatch Configuration Software Disk 1 inside the cover of the User's Operation Manual.

Installing the AutoPatch Configuration Software set uploads X^NConnect, a graphical software program that can be used to modify and download configuration information.

If you lose any of your AutoPatch software, contact AutoAssist (see *Technical Support*, page v) to replace it. Make sure that you have your system's serial number ready when you call.

To modify a configuration file using X^NConnect, you need information about the following topics, which are covered in this chapter:

- Conceptual overview
- Installing and launching
- Panes, views, and dialog boxes
- Opening and downloading a configuration file
- Modifying a configuration file

8.1 Conceptual Overview

The physical component(s) of a system can be a standalone matrix switcher or multiple matrix switchers with or without additional controllers. Opening a copy of the system's configuration (.xcl) file directly to X^NConnect Configuration software allows you to use X^NConnect's four basic functions:

- X^NConnect graphically displays the content of the AutoPatch configuration file. This information is represented in two main views, the "Hardware" view and the "Virtual Matrices" view.
- The representations can be modified to reflect desired physical changes to the system.
- When replacement or new components are added to the system, their configurable properties can be set to the desired values.
- The new configuration information can then be downloaded to the system's CPU(s).

8.2 Installing and Launching

X^NConnect is a graphical software program that displays your most recent configuration and allows easy addition of local presets and modification of other configuration information (see the X^NConnect Help file for assistance). X^NConnect can also download the modified file to the system.

Note: Use this software only if you need to change the configuration information from the original specification.

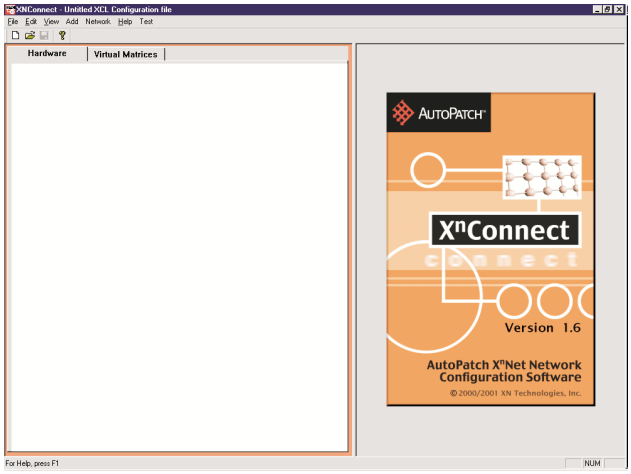
To install X^NConnect:

1. Close all other applications currently running on your PC.
2. Insert the AutoPatch Configuration Software Disk 1 into your floppy drive.
3. From the Start menu in Windows, select Run.
4. Type in A:\setup.exe (or the letter for whichever floppy drive you are using) and click OK.
5. Follow the directions in the subsequent dialogs in the install program.

6. Review the Readme.txt file found on either Disk 1 or after installation in the default install location C:\AutoPtch\Connect\.

To launch X^{N}Connect:

1. From the Start menu, select Programs.
2. Select AutoPatch Applications (or any other file group you selected during the install).
3. Select the Connect file group.
4. Select the Connect program.
   The X^{N}Connect program opens.



8.3 Panes, Views, and Dialog Boxes

X^{N}Connect displays two panes. The graphics are located in the left pane and the properties of the currently selected graphic are in the right pane. At the top of the left pane, you can access the different graphical representation views from two tabs: Hardware and Virtual Matrices. Hardware, such as enclosures and control panels, appear in the Hardware view and existing virtual matrices appear in the Virtual Matrices view. As you switch from view to view, the properties displayed in the right pane automatically change to correspond to the new graphics.

A variety of dialog boxes for modifying your system's configuration file are accessed through the main menu. The menu commands include topics such as Modifying Serial Port Settings, Set Password Combo, Managing Boards, Managing Virtual Matrices, and Managing Presets.

Note: If you have questions regarding a dialog box you have open, X^NConnect provides a context-sensitive Help file that can be accessed by pressing the F1 key.

8.4 Opening and Downloading a Configuration File

Start the process of modifying your configuration file by opening it in X^NConnect. After modifications to the file are completed, X^NConnect can then download the new configuration information to your system.

To open a configuration file in X^NConnect:

1. From the Getting Started dialog box, click Open Configuration File.
2. Using the standard File Open dialog box, locate and open the XCL (*.xcl) Input file for your system.
3. Using the Save As option, make a duplicate copy of your file with a new name.
   (Make a new duplicate copy every time you modify the file.)
4. Enter the desired modifications (see section 8.5) to the file copy.

To download the modified configuration file from X^NConnect to your system, from the Network menu, select Download Configuration.

Note: Depending on the modification, downloading the new configuration information to your system may or may not be done while the matrix switcher is operating.

8.5 Modifying Configuration Files

Modifying a configuration file with X^NConnect involves entering information in one or a series (depending on the modification) of dialog boxes. A brief look at the Help file Contents provides an overview of the modifications possible with X^NConnect.

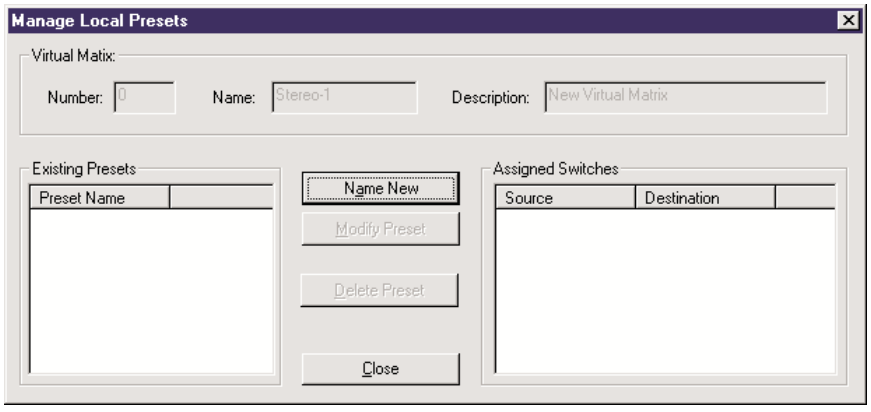
Note: If you have questions regarding a dialog box you have open, X^NConnect provides a context-sensitive Help file that can be accessed by pressing the F1 key.

When modifying a configuration file, it is helpful to keep in mind the following definition of a virtual matrix. A virtual matrix is a set of virtual source (input) channels and destination (output) channels in which the channels' component signals (such as R, G, B, H, and V) are grouped into a single channel to permit the simultaneous switching of them as an aggregate signal (RGBHV). Each component signal must have all sources and destinations within the same physical matrix. The resulting single channel constitutes a source or destination number on the Local Control Panel.

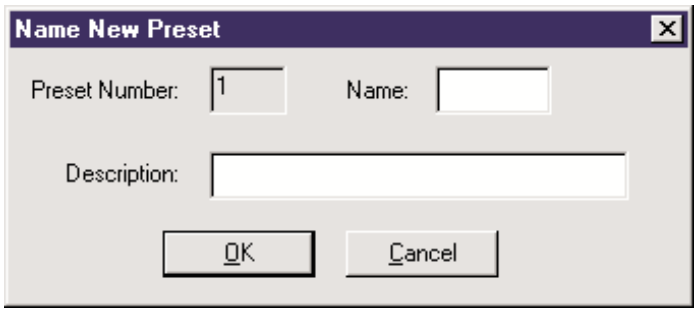
The remainder of this section focuses on two of the most common uses for X^NConnect, configuring local presets and modifying groupings (see the X^NConnect Help file for assistance with other configuration related tasks).

Configuring Local Presets

The process for configuring local presets takes you through three dialog boxes. Start with the Manage Local Presets dialog box to access other dialog boxes that allow you to name a new preset, modify presets, and delete presets.



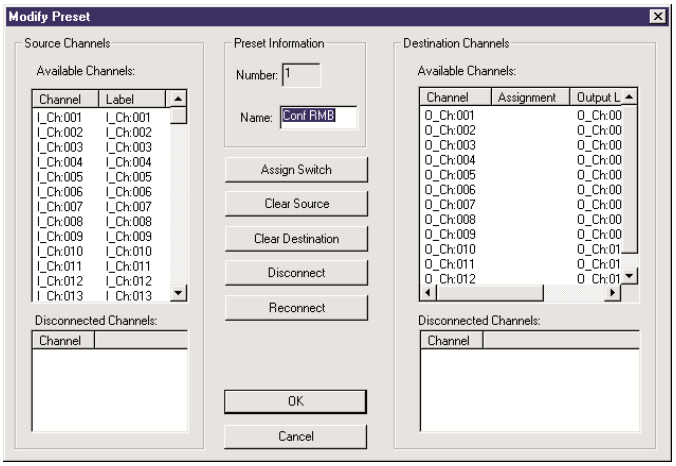
The Name New Preset dialog box allows you to start the process of creating a preset by giving it a name.



To name a new preset (in preparation for specifying preset information):

1. In the Virtual Matrices view, select the targeted virtual matrix, and from the Edit menu, select Manage Local Presets.
2. Click the Name New button.
   The Name New Preset dialog box appears.
3. Enter a name (limited to eight characters) for the new preset.
   (This step is required in order to create a new preset.)
4. Enter a description. (This step is optional.)
5. Click OK to add the newly named preset to the Existing Presets list in the Manage Local Presets dialog box.
6. Proceed to the next set of steps for modifying a preset in order to specify information for the newly named preset.

The Modify Preset button opens the Modify Preset dialog box where you can enter specific information for the new preset.



To modify presets:

1. In the Manage Local Presets dialog box, click the Modify Preset button.
   The Modify Preset dialog box opens.
2. Select any of the following field or button options.
3. When done, click OK to return to the Manage Local Presets dialog box.

- **Name** (modify preset name) by typing a new name (eight character limit) in the Name edit field that is not an existing preset name.
- **Assign Switch** by selecting one available source channel and one or more available destination channels (multiple select by holding down the control key).
  Click the Assign Switch button.
  The assignment will appear in the Assignment column of the Destination Channels list.
- **Clear Source** by selecting a source channel that you want to clear.
  Click the Clear Source button.
  All instances of the selected source will be cleared from the Assignment column of the Destination Channels list.
- **Clear Destination** by selecting a destination channel(s) (multiple select by holding down the control key) that you want to clear.
  Click the Clear Destination button.
  The Source Channel(s) assigned to the destination(s) will be cleared from the Assignment column in the Destination Channels list.
- **Disconnect** by selecting either a source channel or one or more destination channels to be disconnected.
  Click the Disconnect button.
  Current source and destination disconnects are displayed in the Disconnected Channels list on their respective sides of the Modify Preset dialog box.

Caution: Disconnecting an input affects all outputs that the input is connected to whether they are part of this preset or not.

Note: During a source disconnect, all previous assignments for that source are cleared from the Assignment column of the Destination Channels list.

➤ **Reconnect** either a source or destination channel that has been disconnected by selecting it.
Click the Reconnect button.
The channel is now available again for assignments.

Note: Reconnecting does not re-establish previous presets.

To delete an existing preset:

1. In the Virtual Matrices view, go to the Edit menu and select Manage Local Presets.
2. Select the preset from the Existing Preset list that you want to delete.
3. Click the Delete Preset button. A message appears asking if you are sure you want to delete the preset.
4. Click OK to delete the preset and return to the Manage Local Presets dialog box.

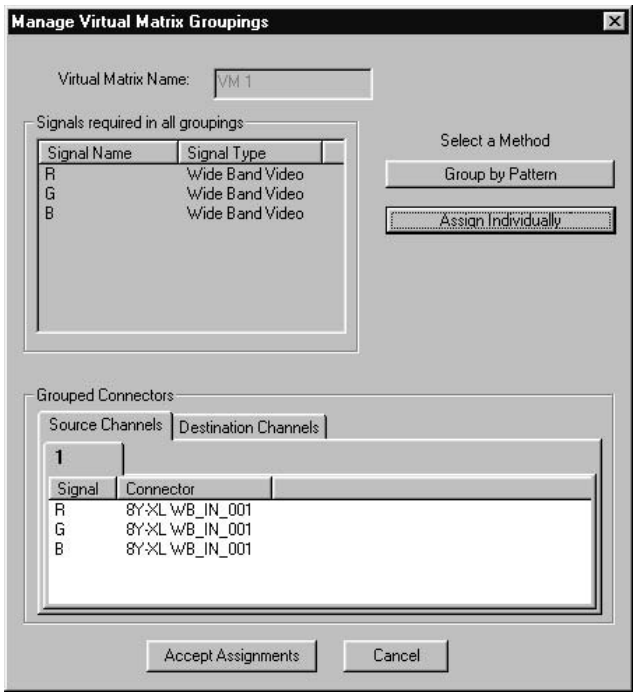
Note: Presets are not implemented until the modified configuration file is downloaded (see Section 8.4) to the system.

Modifying Groupings

The process for modifying groupings takes you through two dialog boxes that allow you to assign connectors individually to a single channel's signals or to a group of channels by pattern.

Manage Virtual Matrix Groupings

Use the Manage Virtual Matrix dialog box as a central point from which to assign signals to connectors, thereby creating virtual source and destination channels (sets of signals that will switch together because they have been grouped together). Even though you must click the Accept Groupings button to accept the new groupings, they are not implemented until the modified configuration file is downloaded (see Section 8.4) to the system.



To specify connector groupings from the Virtual Matrix view:

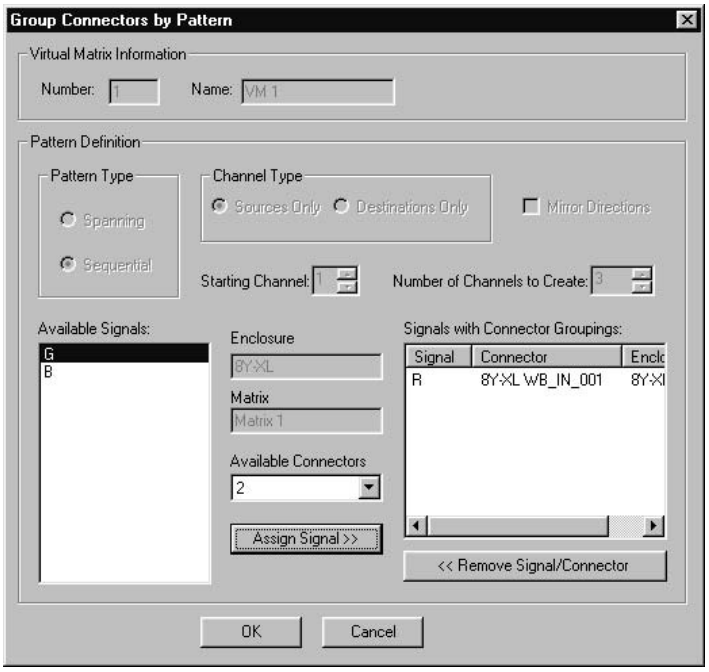
1. From the Edit menu, choose Manage Virtual Matrix Groupings. The Manage Virtual Matrix Groupings dialog box appears.
2. Click the Group by Pattern button to assign sequential or spanning groupings of signals for connectors (see page 8-10).
   Or
   Click the Assign Individually button to assign signals to connectors one at a time (see page 8-11).

   After entering information in the newly opened window and clicking OK, the Manage Virtual Matrix Groupings dialog box will reappear with the results displayed in the read-only box at the bottom (see graphic above). The tabs allow viewing of each channel of grouped signals for both sources and destinations.
3. Repeat as needed, using either method to assign additional groupings.

Note: At any time, click the Accept Groupings button (at the bottom of the box) to save the groupings to the virtual matrix or click the Cancel button to start over. Remember, however, that the new groupings are not implemented until the modified configuration file is downloaded (see Section 8.4) to the system.

Group Connectors by Pattern

The Group Connectors by Pattern dialog box allows you to group signals with connectors in either a spanning or sequential pattern, thereby creating a large number of virtual source and destination channels simultaneously. Choose the spanning pattern to create groupings with blocks of similar signal types; for example, plug all the red in RGB into adjacent connectors on the matrix. Choose the sequential pattern to define groupings where each aggregate signal is plugged in next to each other in the matrix.



Note: This dialog box can only be accessed from the Manage Virtual Matrix Groupings dialog box; select it from the Edit menu after selecting the target virtual matrix.

To specify details about the pattern:

1. Choose the pattern type by clicking either the Spanning or Sequential button.
2. Choose the channel type by clicking either the Sources Only or Destinations Only button.
   The destinations can mirror the sources by clicking the Mirror Directions check box.

3. In the Starting Channel box, choose the starting channel number that you want if it is different from the next available channel that is already displayed.
4. Enter the number of channels you want to create in the Number of Channels to Create box.

You are now ready to group signals to create virtual channels.

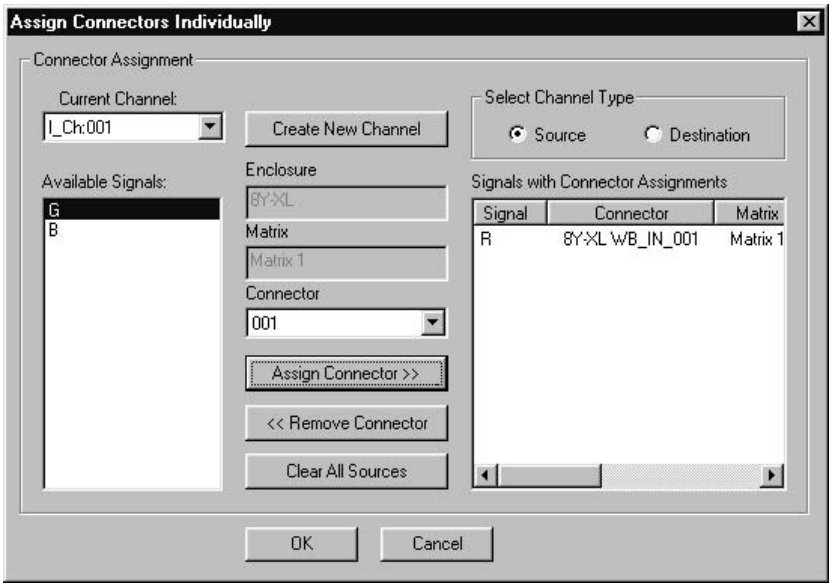
To create signal groupings:

5. From the Available Signals list box, choose a signal.
6. From the Enclosure list box in the middle of the dialog box, choose the enclosure in which you want the selected signal routed.
7. From the Matrix list box, select the physical matrix in the enclosure on which this signal will be switched.
8. From the Available Connectors list box, choose the starting connector. Click the Assign Signal button.
   The added signal appears in the Signals with Connector Groupings box.
   To remove a signal, highlight it, and then click the Remove Signal/Connector button.
9. Continue assigning connectors until all the signals show up in the Signals with Connector Groupings box.
10. Click OK to enter the signal groupings and return to the Manage Virtual Matrix Groupings dialog box.

Note: You must click the Accept Assignments button at the bottom of the Manage Virtual Matrix Groupings dialog box in order for your signals to be grouped into virtual channels. Remember, however, that the new groupings are not implemented until the modified configuration file is downloaded (see Section 8.4) to the system.

Assign Connectors Individually

The Assign Connectors Individually dialog box is used to modify the connector assignments in a virtual matrix. Each channel of a virtual matrix has a specific number of signals, and each signal has a corresponding connector assignment. For each signal in a specific channel, you may add or remove a connector assignment.



To access the Assign Connectors Individually dialog box:

1. In the Virtual Matrix View, right click the virtual matrix for which you want to make connector assignments.
2. Select Manage Connector Groupings.
   The Manage Virtual Matrix Groupings dialog box appears.
3. From the Select a Method section of the dialog box, click the Assign Individually button.
   The Assign Connectors Individually dialog box appears.

To assign connectors individually:

4. From the Current Channel list, select the channel where you want to make connector assignments. If no channels are available, click the Create New Channel button.
5. From the Select Channel Type section of the dialog box, click either Source (input channels) or Destination (output channels).
6. Highlight the signal you wish to add in the Available Signals list.
7. From the Enclosure list box in the middle of the dialog box, choose the enclosure in which you want to create the groupings.
8. From the Matrix list box, select the physical matrix on which this signal will be switched.

9. From the Connector list, select the connector you want to assign a signal to and click the Assign Connector button.
   The signal and its connector appear in the Signals with Connector Assignments list.
10. Continue to make assignments until all signals in all channels have been given connector assignments. This ensures that the virtual matrix will be valid.
11. Click OK to enter the connector assignments and return to the Manage Virtual Matrix Groupings dialog box (connectors are entered but not accepted; see the following Note).

Note: You must click the Accept Assignments button at the bottom of the Manage Virtual Matrix Groupings dialog box in order for your connector assignments to be accepted. Remember, however, that the new groupings are not implemented until the modified configuration file is downloaded (see Section 8.4) to the system.

Any highlighted signal and connector can be removed by clicking the Remove Connector button. The Clear All Sources button removes all connector assignments for all channels of the currently selected channel type (sources or destinations). This is useful for removing all connectors and starting fresh with no assignments

Adjusting Gain

Gain is the ratio of a signal's output level to input level and is usually measured in decibels (dB). Adjust gain to equalize signal levels so you have the same output level on all signals, no matter what their initial input levels are.

Gain control on audio and video output signals is standard in the 8Y-XL. However, you can also order audio and video input boards with gain control.

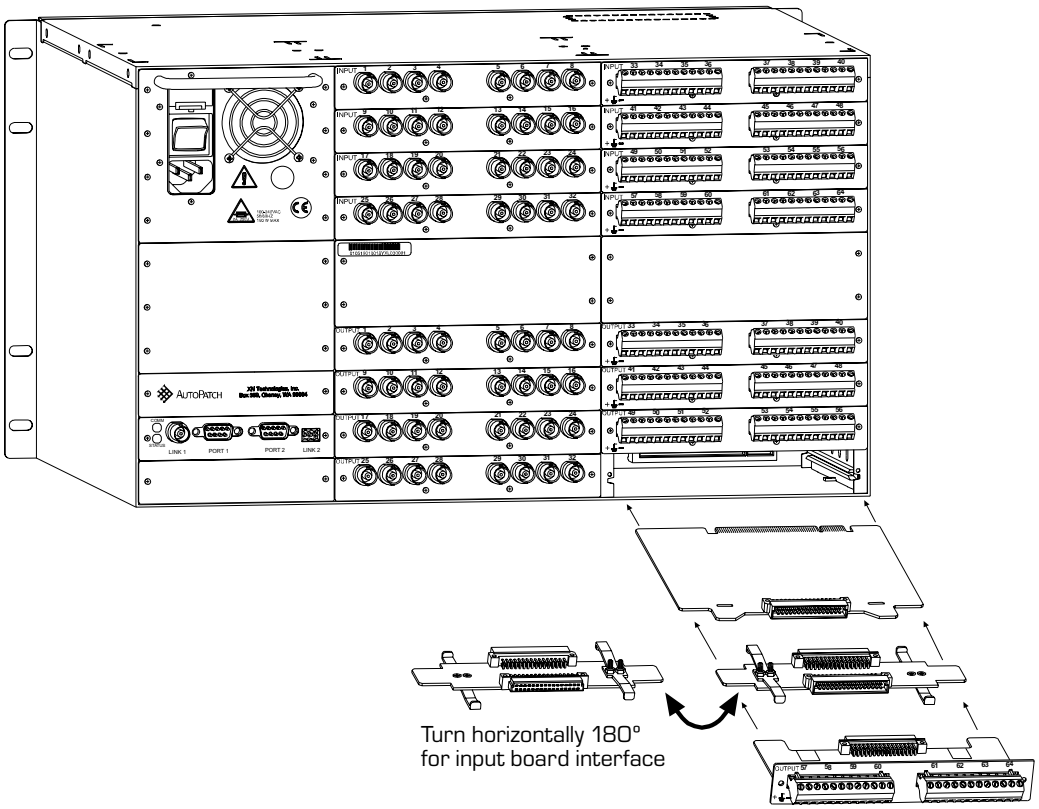
At the factory, inputs and outputs are set to unity gain (overall gain of 1 dB). An extender board that makes the gain adjustment pots accessible and a gain adjustment tool are shipped with the 8Y-XL in the master enclosure's shipping box.

When adjusting gain, you will work with switching boards, daughter boards, and an extender board. The switching board links the daughter board to the main components of the matrix, and the daughter board holds signal connectors and gain adjustment pots. The main function of the extender board is linking the daughter board to the switching board while you adjust gain. During normal operation the daughter board is attached to the switching board and the extender board is in storage.

Each signal's gain adjustment pot is directly behind the signal's connector on the daughter board and is labeled TR#.

The extender board fits both input and output board sets; however, input and output board sets fit together conversely so you must flip the extender board to fit each set. To adjust gain on an output board, attach the extender board's male connector to the switching board; for an input board set, attach the female connector to the switching board (see graphic below).

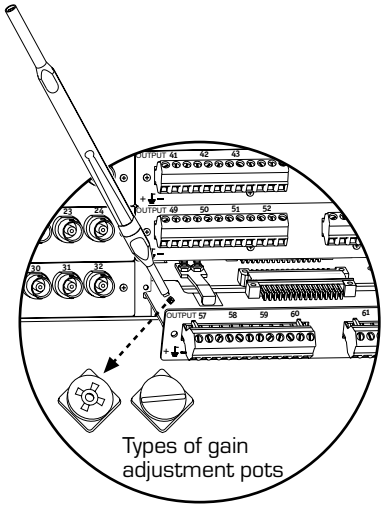
Immediately after adjusting signal gain, remove the extender board. Do not continue normal operation of the 8Y-XL with the extender board in place.



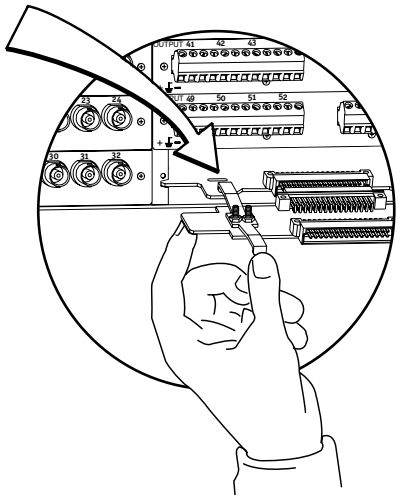
Warning: To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded (see the *Caution* page inside front cover) before handling any internal 8Y-XL materials.

To adjust the gain:

1. Turn the enclosure off.
2. Remove the I/O daughter board from the enclosure.
3. Attach the extender board between the switching board and the daughter board.
4. Reapply power. The 8Y-XL should be in proper working order.
5. While monitoring the input or output signal(s), adjust the signal gain as necessary by placing the tip of the gain adjustment tool in the gain adjustment pot (TR#) and turning the tool clockwise or counterclockwise (see graphic below).



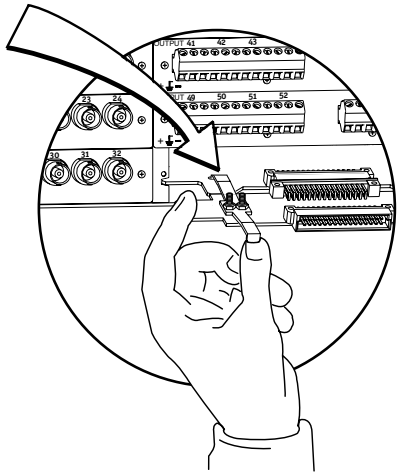
6. Remove the extender board alone by pushing down on the daughter board side of the extender board arm while pulling the board out (see graphic below).



Note: Only use the extender board while adjusting the gain. Do not continue using the extender board during normal operation.

7. Return the enclosure to its original state.

If you need to remove the switching board, remove the extender board and the switching board together by pulling up on the daughter board side of the extender board arm while pulling the boards out (see graphic below).



Adding Hardware

You can add input and output boards, vertical interval timing (sync) boards, and enclosures to expand your system's capabilities. Input and output boards increase an enclosure's possible signal routings. A vertical interval sync board synchronizes video signal switches with the output device's refresh rate. Adding enclosures increases the entire system's switching capabilities.

When you add hardware to an 8Y-XL, you must update the system's configuration information by downloading a new configuration file. A new configuration file, link cables, and other system products are provided with the new hardware.

This chapter covers:

- Adding Boards
- Adding Enclosures

10.1 Adding Boards

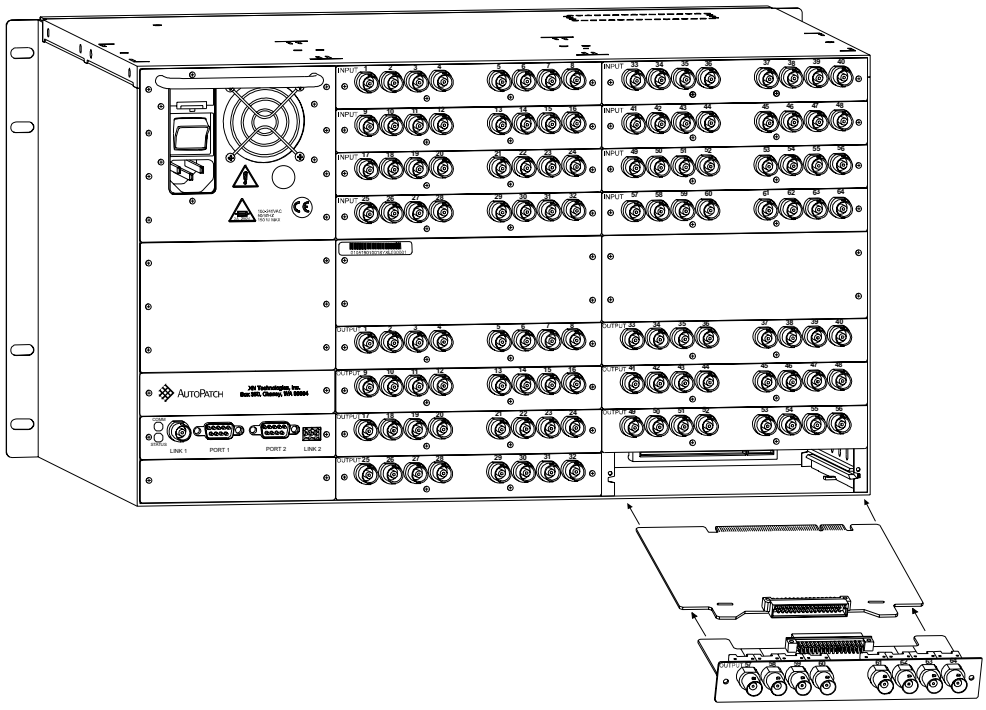
Input and Output Boards

The number of input and output signals in an enclosure determines the number of input and output boards. In an enclosure, signals are sent and received through input or output connectors. Each board has eight connectors.

To add an input or output board:

Warning: To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded (see the *Caution* page inside front cover) before handling any internal 8Y-XL materials.

1. Turn off the enclosure.
2. Remove the plate that covers the empty expansion/control slot. Make sure you are working with the correct slot. If you put the board in the wrong slot, signal routing is affected. The board's location must match the system's configuration information (uploaded from the configuration file). A new configuration file is sent with new boards.
3. Attach the daughter board to the switching board.



4. Line up the board assembly (switching board and daughter board) with the board guides that are on the left and right of the board slot (see graphic on the previous page). Carefully push the assembly into the enclosure until the switching board snaps into place.
5. Insert the screws into the holes on the connector assembly and tighten the screws until they are snug.
6. Attach the signals to the appropriate connectors (see Chapter 4, "Attaching Inputs and Outputs").
7. Reapply power and turn on the enclosure.

Note: If you are adding an audio board and want to adjust the gain, see Chapter 9, "Adjusting Gain."

Vertical Interval Timing Board

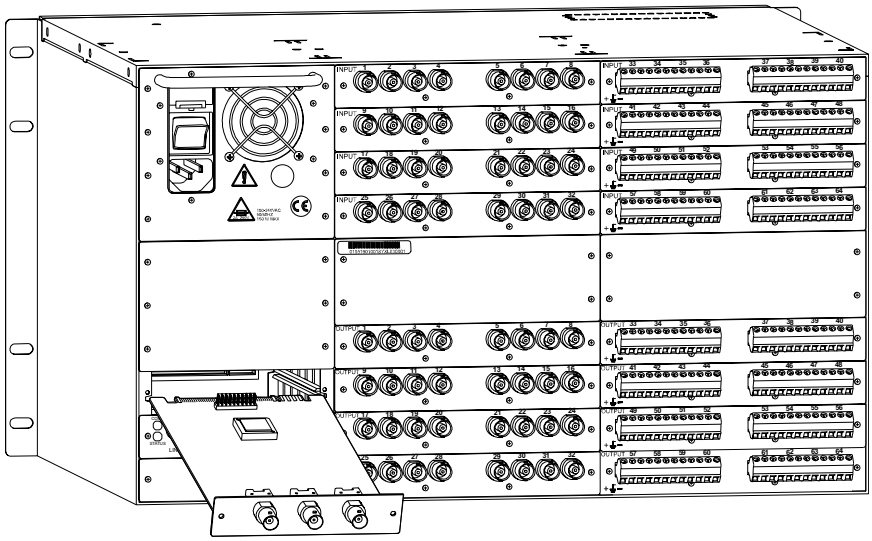
A Vertical Interval Timing board (sync board) provides the 8Y-XL with complete vertical interval synchronization switching capability. The sync board can utilize a master sync signal by separating sync from an input signal (such as a composite video input) or can be used with a blackburst generator.

Each enclosure in an 8Y-XL can contain one sync board. You may want a sync board in each enclosure that switches video signals. If the system was originally ordered with sync boards, they are already installed in the enclosures.

To add a sync board:

Warning: To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded (see the *Caution* page inside front cover) before handling any internal 8Y-XL materials.

1. Make sure all enclosures receiving a sync board are turned off.
2. Remove the faceplate directly above the CPU.
3. Line up the sync board with the board guides on the left and right of the top board slot. Make sure the connectors are on the upper side of the board (see graphic below).



4. Carefully push the board all the way in, until it snaps into place.
5. Attach the new faceplate to the enclosure with screws.
6. Once you have added sync board(s), verify the system's response by reapplying power to all enclosures containing video in the system and checking the splash screen.
7. Update the configuration file using X^{N}Connect to enable the sync board.

10.2 Adding Enclosures

You can expand the switching capabilities of an 8Y-XL by adding enclosures. Whenever you add hardware to an 8Y-XL you must update the system's configuration information by uploading a new configuration file. A new configuration file, link cables, and other system products are provided with the new enclosure(s).

When attaching signals, follow the AutoPatch "8Y-XL Connector and Groupings Guide" included with the new enclosure; all information specific to the system is on or with that sheet.

To add an enclosure:

Warning: To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded (see the *Caution* page inside front cover) before handling any internal 8Y-XL materials.

1. Although it is not necessary to turn all the enclosures in the system off, we suggest doing so unless current operations will be disturbed.
2. Link the new enclosure to the other enclosures. See Chapter 3, "Linking Enclosures," for more information about linking enclosures.
3. Following the new AutoPatch 8Y-XL Connector and Groupings Guide, attach all inputs and outputs. See Chapter 4, "Attaching Inputs and Outputs" for more information about attaching inputs and outputs.
4. Turn on all the enclosures in the system. The 8Y-XL goes through its startup sequence.

AutoPatch Service and Returns Policy

A.1 Service

The AutoPatch 8Y-XL is to be serviced only by AutoPatch authorized service agents.

Return Authorizations

Except for warranty claims, merchandise will not be accepted for return or exchange after the first thirty (30) days following the invoice date.

Returned items must be shipped prepaid and insured in their original packing containers (if possible). When returning merchandise, clearly show the Return Materials Authorization (RMA) number on the outside of each carton. Merchandise will not be accepted for any reason without an RMA number.

Products and parts returned or exchanged for any reason other than warranty purposes are subject to a restocking fee not greater than twenty percent (20%) of the invoiced price, if returned in unused condition.

Claims for Shipping Damages

Unless otherwise specified, merchandise is normally shipped by Federal Express Economy service; however, AutoPatch reserves the right to select the final method and carrier for any shipment.

Although we take special care to ensure the safe arrival of all orders, shipping accidents and damage can occur. Shipments are transferred to the appointed carrier in good condition, and AutoPatch's liability for the product ceases when the transfer to the carrier is complete. Therefore, claims for damages and shortages must be filed with the transporting company by the receiving company within fifteen (15) days of receipt.

Visible damage and shortages must be noted on the freight bill; packaging and contents must be retained for inspection.

A.2 Replacement Policies and Procedures

During the warranty period:

1. Describe the problem to an AutoPatch dealer, regional representative, or the AutoPatch customer service department.
2. Upon verification of a problem that requires factory repairs, an AutoPatch customer service representative will issue a Return Materials Authorization (RMA) number, and we will, at no cost, repair or replace the part(s) returned to the factory and return the part(s) to the sending party. If conditions do not permit this procedure, we will invoice new or reconditioned (at AutoPatch's option) replacement part(s) to the dealer and ship the part(s) to the dealer or to the consumer if so directed by written order from the dealer. Unless otherwise instructed in writing by an *AutoPatch* customer service representative, part(s) replaced under this warranty must be returned to the factory:

   a) within thirty (30) days;

   b) with shipping and insurance costs prepaid;

   c) with the RMA number clearly indicated on the outside of each container;

   d) in the original shipping container(s), if possible;

   e) with a written description of problem.

   If the replaced part(s) are returned within thirty (30) days, we will apply credit to the dealer's account for the total value of part(s) determined defective, plus return shipping costs. Any part(s) received after thirty (30) days or otherwise not in compliance with these requirements may be refused, and credit will not be issued.
3. Repaired or replaced part(s) will be warranted for the remainder of the original system warranty period for the first thirty (30) days following the invoice date, or we will extend the original warranty period by the period of verifiable downtime, whichever provides the greatest benefit.

Following warranty expiration:

1. Call your AutoPatch dealer, area representative, or the AutoPatch customer service department with a description of the problem.
2. Upon verification of a problem that requires factory repairs, an AutoPatch customer service representative will issue a Return Materials Authorization (RMA) number. We will, at nominal cost, invoice the sending party, repair or replace the part(s) returned to the factory and return those part(s) to the sending party. If conditions do not permit this procedure, we will invoice and ship new or reconditioned (at AutoPatch's option) replacement part(s) to the dealer or to the consumer if so directed by written order from the dealer.
3. Post warranty repairs and replacements are warranted for the first thirty (30) days following invoice date.

A.3 Special Notice

AutoPatch reserves the right to modify or discontinue designs, specifications, warranties, and policies without notice. All data with regard to model numbers series, specifications, and prices in our literature have been thoroughly reviewed and edited. Although we cannot assume responsibility for inadvertent omissions or errors, we sincerely apologize if misunderstandings occur, and we appreciate your criticism, corrections, and suggestions.

Product Specifications

The following pages contain performance specifications for your AutoPatch 8Y-XL Distribution Matrix. The AutoPatch web site (www.autopatch.com) also has a full list of specifications for all AutoPatch products.

B.1 General

AC Power	100 - 240 V single phase
Frequency	47 - 63 Hz
Humidity	0 to 90% non-condensing
Dimensions	13.5 in. (34.29 cm) depth 17.5 in. (44.5 cm) width without mounting ears 19.0 in. (48.26 cm) width with mounting ears 10.37 in. (26.34 cm) or 6 RU height
Weight	Approximately 17 lb. (7.73 kg)
Fuse	2 Amp time lag (5 x 20 mm)

B.2 Analog Audio

Standard Audio Boards

Throughput

Parameter	Conditions	Value
Frequency Response	(20 Hz to 20 kHz)	<ñ0.1 dB
Gain Flatness	(20 Hz to 20 kHz) (20 Hz to 100 kHz)	0.01 dB 0.1 dB
THD + Noise	Vin=3.3 dBu to 13.2 dBu f=20 Hz to 20 kHz	<.01%
Signal to Noise Ratio (S/N)	Vin=13.2 dBu, 20 Hz to 20 kHz	-103 dB
Adjacent Crosstalk	f=1 kHz, Vin= 24 V	<-95 dB
Power Supply Rejection Ratio	Vs= 15 V	-80 dB (Typ) -60 dB (Min)

Input

Parameter	Conditions	Value
Level (maximum)	Common Mode Differential	19.4 dBu 4 36.1 dBu
Impedance		18 k
Type		Balanced or Unbalanced
CMRR	VCM= 10 V, 20 Hz to 20 kHz	-90 dB (Typ) -70 dB (Min)
Gain Control Range	Vin=3Vp-p	-3 to +10 dB
Connector Type		Pluggable 3 Position Screw Terminal

Output

Parameter	Conditions	Value
Level (headroom)		28 dBu
Impedance		50
Type		Balanced or Unbalanced
Gain Control Range		-3 to +10 dB
Connector Type		Pluggable 3 Position Terminal Block

B.3 Analog Video

Standard Video Boards

Throughput

Parameter	Conditions	Value
Bandwidth (1 dB)	Vin= 1 V	12 MHz (1:ALL)
Bandwidth (3 dB)	Vin= 1 V	30 MHz (1:ALL)
Differential Gain	f=3.58 MHz	0.1% or Better
Differential Phase	f=3.58 MHz	0.1 or Better
Signal to Noise Ratio (S/N)	Vin=+0.7 V	-73 dB
Crosstalk (adjacent channel)	f=5 MHz	<-60 dB
Time Delay	Vin= 0.5 V square wave	<20 ns

Input

Parameter	Conditions	Value
Level (maximum)		5 V
Impedance		75 or Hi-Z (22 k)
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Output

Parameter	Conditions	Value
Level (maximum)		5 V
Impedance		75
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Wideband Video Boards

Throughput

Parameter	Conditions	Value
Bandwidth (3 dB)	Vin= 1 V	250 MHz (1:ALL)
Signal to Noise Ratio (S/N)	Vin=0.7 V (100% IRE)	-70 dB
Crosstalk (adjacent channel)	f=5 MHz	-60 dB
Time Delay	Vin= 0.5 V square wave	<20 ns

Input

Parameter	Conditions	Value
Level (maximum)		2 V
Impedance		75 or Hi-Z (22 k)
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Output

Parameter	Conditions	Value
Level (maximum)		2 V
Impedance		75
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Ultra-wideband Video Boards

Throughput

Parameter	Conditions	Value
Bandwidth (3 dB)	Vin= 1 V	400 MHz (1:ALL)
Signal to Noise Ratio (S/N)	Vin=0.7 V (100% IRE)	<-70 dB
Crosstalk (adjacent channel)	f=5 MHz	<-60 dB
Time Delay	Vin= 0.5 V square wave	<20 ns

Input

Parameter	Conditions	Value
Level (maximum)		2 V
Impedance		75 or Hi-Z (22 k)
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Output

Parameter	Conditions	Value
Level (maximum)		2 V
Impedance		75
Gain Control Range		-3 to +10 dB
Connector Type		BNC

BCS (Basic Control Structure) Commands

BCS is a set of alphanumeric characters that allows a PC or other control device to send commands to the system serially. When using a PC to control the 8Y-XL, use serial software, such as Windows95 HyperTerminal, to establish communication. Command lines are not case-sensitive.

The following table shows BCS command characters (keys), their functions, and short descriptions of their functions.

Key	Function	Description
C	Change	Initiates an execute switch command
L	Level	Flags the next 1 - 3 digit number as a level number
"0" - "9"	Number	Identifies inputs, outputs, presets, and levels; combine the digits to form larger numbers
I	Input	Flags the next 1 - 3 digit number as an input specification
O	Output	Flags the next 1 - 3 digit number as an output specification **Note:** O is the letter O, not the number zero (0)
" "	Space	Separates numbers in multiple number entries
T	Take	Executes a command
X	Exit	Exits, or cancels, the command being entered
S	Status	Initiates verification of the status of input and output connections
D	Disconnect	Initiates a disconnect switch command
R	Global Preset	Initiates an execute global preset or execute local preset command **Note:** Global presets are not implemented at this time
P	Local Preset	Flags the next 1 - 3 digit number as a local preset number

Glossary

A

ASCII (American Standard Code for Information Exchange)
A code for representing alphanumeric information.

B

Backlight
The light that illuminates the LCD screen of the control panel on the enclosure. Activate the backlight by pressing the Backlight key on the control panel.

BAUD
The speed at which communications travel through the serial connector. The 8Y-XL can send and receive communications at 9600, 19200, 38400, and 57600 BAUD.

BCS (Basic Control Structure)
A set of alphanumeric characters that combine to form command lines. BCS command lines can be used to control a system from any serial device that allows you to enter characters, such as a PC (personal computer).

C

Command Line
A set of BCS command characters that constitute a command recognized by the CPU.

Configuration File
A text file containing system configuration information referenced by each enclosure's CPU during any type of switch operation.

CP-10 Control Panel
An optional panel on the front of the enclosure with an LCD and keys for entering commands. The CP-10 is designed for system control of the 8Y-XL Distribution Matrix.

CPU (Central Processing Unit)
Receives, interprets, and executes commands from the user through the user interface (the CP-10 Control Panel or other control device).

D

Distribution Matrix
(see matrix switcher)

E

Enclosure
The metal chassis that holds input and output boards, a CPU board, and a power supply. Each 8Y-XL enclosure can contain up to 8 input and 8 output boards, providing a total capacity of up to 64 input and 64 output signal paths.

ESD (Electrostatic Discharge)
Electrical charges (such as static electricity) that can damage sensitive components inside an enclosure. ESD damage could occur if you are not properly grounded and not handling components correctly (see the *Caution* page inside the front cover of this manual for more details about ESD).

Expansion/Control Slots
Empty slots on the rear of an enclosure that will increase functionality and add new features to your system.

External Controller
Any device that can control the matrix switcher via the serial connector.

I

Input and Output Connectors
Attachment points on the rear of an 8Y-XL enclosure for devices that connect to the system. Input and output signal cables attach to the input and output connectors. Standard 8Y-XL audio and data connectors are 3 position terminal block; video and sync connectors are BNC.

Input Board
A circuit board that receives video, audio, or data signals from outside sources.

L

LCD (Liquid Crystal Display)
The screen on the CP-10 Control Panel for user interaction.

Level
A level is a set of input and output signals that are grouped and, therefore, switch together. In a configuration file, a level is referred to as a “virtual matrix.”

Local Preset
A pre-defined set of signal routings that can be executed at any time. Presets are defined in the configuration file.

M

Matrix Switcher
The hardware and software necessary to switch signals. Matrix switchers are also known as routing switchers or routing matrices.

O

Output Board
A circuit board that routes input signals to specified destinations.

Output Connectors
(see Input and Output Connectors)

P

Power Supply
Contains a power switch, a power connector, the fuse drawer, and the main power supply fan vent.

S

SBC (Single Bus Controller)
Devices for controlling the input to a specified output device. For more information see the SBC documentation.

Serial Connector
A 9-pin female connector on the rear of an enclosure used to connect serial external control devices connect to the matrix switcher.

Serial Controller
An external controller that communicates with the matrix switcher via a serial cable.

Signal
A set of connectors whose signals switch together. A signal may contain audio, video, data, or sync information.

Single Bus Controller
(see SBC)

Switch
An active connection between an input signal and one or more output devices.

V

Virtual Matrix
A set of virtual inputs and outputs (or source and destination channels) in which aggregate signals (such as RGBHV) are grouped into a single channel to permit simultaneous switching of the component signals (R, G, B, H, and V). Virtual matrices are also referred to as levels.

X

X^{N}Connect
A graphical software program that displays your most recent configuration and allows easy addition of local presets and modification of other configuration information (see the X^{N}Connect Help file for assistance).

X^{N}Net
An internal communication protocol that requires software driver support for Ethernet and Neuron® interfaces.

Index

A

AC line conditioner 1-7, 2-2, 6-1

AC power B-1

adding boards

see hardware, adding

adding enclosures

see hardware, adding

adjusting gain 9-1

illus. 9-3

applying power

see startup

arrow keys 1-3

audio

attaching 4-3
board specifications B-2
board, *illus.* 1-6
connectors iv

AutoAssist v

B

Backlight key, CP-10 1-5

Basic Control Structure

see BCS

BAUD rate settings 5-3

BCS (Basic Control Structure)

command characters (keys) C-1
definition iv
test switch 7-4

BNC barrel connector 4-5

boards

capacity ii
extender 9-2
high impedance 4-6
see also inputs and outputs

buttons (keys)

see CP-10 Control Panel

C

cable

attaching 3-2
link 2-1, 3-1, 10-5
serial ii
signal 4-2

Cancel key, CP-10 1-4

Caution

heat-producing equipment 2-1
paralleling inputs, configuration file 4-5
paralleling inputs, signal splitting 4-6
presets, disconnecting an input 8-7

Central Processing Unit

see CPU

Change key, CP-10 1-4

chapter descriptions iii

Comma (,) key, CP-10 1-5

Command screen 1-3

startup 6-2
test switch 7-2
see also CP-10 Control Panel
see also LCD screen

configuration file
- definition iv
- location 8-1

configuration file, X^NConnect
- configure local presets 8-5 to 8-8
- download 8-4
- graphical representation 8-2
- Help file 8-5
- modify file 8-5 to 8-13
- modify groupings 8-8 to 8-13
- open 8-4

connectors
- audio 4-3
- BNC barrel 4-5
- Ethernet 3-2, 5-1
- external control devices 1-6, 5-2
- serial 1-6
- termination 3-2
- X^NNet 3-3

control options ii

CP-10 Control Panel
- definition iv
- directions for using 1-3
- executing a test switch 7-2 to 7-3
- *illus.* 1-3
- keys 1-3
- startup 6-2

CPU (Central Processing Unit)
- components 1-7
- Ethernet ports, linking 3-2
- *illus.* 1-6
- serial controllers, attaching 5-2
- X^NNet ports, linking 3-3

D

dimensions, enclosure B-1

E

electrostatic discharge
- *see* ESD

e-mail, technical support v

enclosure
- connector capacity ii
- control panel, CP-10, *illus.* 1-3
- dimensions B-1
- linking 3-1 to 3-3
- rack installation 2-2
- rear, *illus.* 1-6
- weight B-1

ESD (electrostatic discharge)
- definition iv
- *Warning*, adding boards 10-2
- *Warning*, adding enclosures 10-5
- *Warning*, adding sync boards 10-4
- *Warning*, adjusting gain 9-3

Ethernet link connectors 3-2

Ethernet ports 3-2

executing test switch
- *see* test switch

expansion/control slots
- description 1-7
- input/output boards, adding 10-2 to 10-3
- vertical interval sync board, adding 10-3 to 10-4

extender board 9-2

external controllers
- attaching 5-1
- BAUD rate settings 5-3
- cable pinout, *illus.* 5-2
- communication protocols 5-1

F

frequency B-1

front of enclosure 1-2

fuse
- location 1-7
- specifications B-1

G

gain, adjusting 9-1
- extender board 9-2
- *illus.* 9-3

groupings
- *see* X^NConnect, modify groupings

H

hardware, adding

- configuration files 10-1, 10-2, 10-4, 10-5
- enclosures 10-5
- input and output boards 10-2
- vertical interval sync board 10-3
- *Warning*, adding boards, ESD 10-2
- *Warning*, adding enclosures, ESD 10-5
- *Warning*, adding sync boards, ESD 10-4

heat-producing equipment, *Caution* 2-1

humidity B-1

HyperTerminal 6-3

I

Input key, CP-10 1-4

inputs

- high impedance boards 4-6
- paralleling, configuration file, *Caution* 4-5
- paralleling, *illus.* 4-5
- paralleling, signal splitting, *Caution* 4-6

inputs and outputs

- adding 10-2 to 10-3
- attaching 10-1
- audio, attaching, *illus.* 4-3
- connector types iv
- definition iv
- disconnecting an input, *Caution* 8-7
- *illus.* 1-6
- numbering 4-1
- video, attaching, *illus.* 4-2

installation procedure 2-1 to 2-2

installer's product notes ii

K

keys

- *see* CP-10 Control Panel

L

LCD screen

- backlight key 1-5

LCD screen (continued)

- *illus.* 1-3
- viewing angle 2-1

level

- definition iv
- *see also* virtual matrix

Level key, CP-10 1-4

linking, enclosures

- via Ethernet, *illus.* 3-2
- via X^NNet, *illus.* 3-3

local presets

- configuring with X^NConnect 8-5 to 8-8

M

manual overview iii

multi-enclosure system 3-1

multi-enclosure systems

- paralleling inputs 4-5

N

number keys, CP-10 1-3

O

Output key, CP-10 1-4

outputs

- *see* inputs and outputs

P

paralleling inputs 4-5 to 4-6

- signal splitting, *Caution* 4-6

performance specifications B-1

pinout, *illus.* 5-2

power

- applying 6-1 to 6-2
- cords 6-1
- standard international power sources 6-1
- *see also* startup

power connector 1-7

power supply 1-7

power switch 1-7

Preset key, CP-10 1-4

presets
see X^NConnect, configure local presets
product specifications
see specifications
Program key, CP-10 1-5

R

rear of enclosure, *illus.* 1-6
replacement policies and procedures A-2
return authorizations A-1
returning equipment A-1
RMA (Return Materials Authorization) A-1

S

serial cables ii
pinouts, *illus.* 5-2 to 5-3
serial communication 5-2, C-1
serial connectors 1-7
illus. 1-6
serial controller
attaching 5-2 to 5-3
BCS (Basic Control Structure) commands 7-4
definition 5-2
serial number 1-7
serial ports
communication protocols 5-1
location, *illus.* 1-6
Service and Returns Policy A-1 to A-3
shipping boxes 1-1
shipping, damage claims A-1
signal
cables, attaching 4-2
splitting 4-6
types v
Space key, CP-10 1-5
Special key, CP-10 1-5
Special Notice A-3
specifications
AC power B-1
specifications (continued)
audio B-2
dimensions B-1
frequency B-1
fuse B-1
humidity B-1
video, standard B-3
video, ultra-wideband B-5
video, wideband B-4
weight B-1
startup
applying power 6-2
control device, *illus.* 6-3
CP-10 Control Panel 6-2
Status key, CP-10 1-4
surge protectors 1-7, 2-1, 6-1
switch
definition v
see also test switch
sync boards, vertical interval
connectors 10-4
definition 10-3

T

Take key, CP-10 1-4
technical support v
terms to know iv
test switch
BCS (Basic Control Structure) 7-4
CP-10 Control Panel, *illus.* 7-2
executing 7-1 to 7-4
tools for installation 2-1
twisted pair wire 3-1, 4-3

U

Undo key, CP-10 1-5
unpacking
shipping boxes, contents 1-1
tips 1-2

V

vertical interval sync
attaching boards 10-4
definition 10-3

video

attaching boards, *illus.* 4-2
board specifications B-3 to B-5

virtual matrix

definition 8-5
modifying groupings 8-8 to 8-13
see also level

W

Warning

adding boards, ESD 10-2
adding enclosures, ESD 10-5
adding sync, ESD 10-4
adjusting gain, ESD 9-3

warranty repair and replacement information A-1 to A-3

Special Notice A-3

web site v

weight, enclosure B-1

wire, twisted pair 3-1, 4-3

X

X^NConnect

conceptual overview 8-2
configure local presets 8-5 to 8-8
definition v
download configuration file 8-4
functions 8-2
Help file 8-4
installation 8-2
launch 8-3
modify configuration file 8-5 to 8-13
modify groupings 8-8 to 8-13
open configuration file 8-4
panes and views 8-3
virtual matrix 8-5

X^NConnect, dialog boxes

Assign Connectors Individually 8-11
Group Connectors by Pattern 8-10
Manage Virtual Matrix Groupings 8-8
Modify Preset 8-6
Name New Preset 8-6

X^NNet

connectors, location 1-6, 1-7

X^NNet (continued)

definition v
enclosures, linking, *illus.* 3-1
external controllers, attaching 5-1

AUTOPATCH

8Y-XL User's Operation Manual

Version B0 905464

CAUTION

To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded before touching any internal materials.

When working with any equipment manufactured with electronic devices, proper ESD grounding procedures must be followed to ensure people, products, and tools are as free of static charges as possible. Grounding straps, conductive smocks, and conductive work mats are specifically designed for this purpose. Anyone performing field maintenance on AutoPatch equipment should utilize an appropriate ESD field service kit complete with at least a dissipative work mat with a ground cord and a UL listed adjustable wrist strap with another ground cord. These items should not be manufactured locally, since they are generally composed of highly resistive conductive materials to safely drain static charges, without increasing an electrocution risk in the event of an accident. ESD protective equipment can be obtained from 3M™, Desco®, Richmond Technology®, Plastic Systems®, and other such vendors.

Important Safety Information and Instructions

When using and installing your AutoPatch product, adhere to the following basic safety precautions. For more information about operating, installing, or servicing your AutoPatch product see your product documentation.

- Read and understand all instructions before using and installing AutoPatch products.
- Use the correct voltage range for your AutoPatch product.
- There are no user serviceable parts inside an AutoPatch product; service should only be done by qualified personnel.
- If you see smoke or smell a strange odor coming from your AutoPatch product, turn it off immediately and call AutoAssist.
- Turn off and unplug an enclosure before adding or removing boards, unless otherwise specified in that product's documentation.
- To avoid shock or potential ESD (Electrostatic Discharge) damage to equipment, make sure you are properly grounded before touching components inside an AutoPatch product.
- For products with multiple power supplies in each unit, make sure all power supplies are turned on simultaneously.
- Use surge protectors and/or AC line conditioners when powering AutoPatch products.
- Only use a fuse(s) with the correct fuse rating in your enclosure.
- Make sure the power outlet is close to the product and easily accessible.
- Make sure the product is on or attached to a stable surface.
- Turn off equipment before linking pieces together, unless otherwise specified in that product's documentation.
- For safety and signal integrity, use a grounded external power source and a grounded power connector.

Information et directives de sécurité importantes

Veuillez vous conformer aux directives de sécurité ci-dessous lorsque vous installez et utilisez votre appareil *AutoPatch*. Pour de plus amples renseignements au sujet de l'installation, du fonctionnement ou de la réparation de votre appareil *AutoPatch*, veuillez consulter la documentation accompagnant l'appareil.

- Lisez attentivement toutes les directives avant d'installer et d'utiliser les appareils *AutoPatch*.
- Le voltage doit être approprié à l'appareil *AutoPatch*.
- Les appareils *AutoPatch* ne contiennent aucune pièce réparable par l'usager; la réparation ne doit être effectuée que par du personnel qualifié.
- Si de la fumée ou une odeur étrange se dégagent d'un appareil *AutoPatch*, fermez-le immédiatement et appelez le Service de soutien technique (*AutoAssist*).
- Fermez et débranchez le boîtier avant d'ajouter ou d'enlever des plaquettes, à moins d'indication contraire fournie dans la documentation du appareil.
- Pour éviter les chocs ou les dommages éventuels causés à l'équipement par une décharge électrostatique, veillez à ce le dispositif oit bien relié à la terre avant de toucher les composantes se trouvant à l'intérieur d'un appareil *AutoPatch*.
- Veillez à ce que tous les blocs d'alimentation des appareils dotés de blocs d'alimentation multiples dans chaque unité soient allumés simultanément.
- Servez-vous de protecteurs de surtension ou de conditionneurs de lignes à courant alternatif lorsque vous mettez les appareils *AutoPatch* sous tension.
- Placez uniquement des fusibles de calibre exact dans les boîtiers.
- Veillez à ce que la prise de courant soit proche de l'appareil et facile d'accès.
- Veillez à ce que votre appareil *AutoPatch* soit installé sur une surface stable ou qu'il y soit fermement maintenu.
- Fermez toutes les composantes de l'équipement avant de relier des pièces, à moins d'indication contraire fournie dans la documentation de l'appareil.
- Par mesure de sécurité et pour la qualité des signaux, servez-vous d'une source d'alimentation externe mise à la terre et d'un connect d'alimentation mis à la terre.

Notices

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No patent liability is assumed with respect to the use of information contained herein.

While every precaution has been taken in the preparation of this publication, AutoPatch assumes no responsibility for error or omissions. No liability is assumed for damages resulting from the use of the information contained herein.

Further, this publication and features described herein are subject to change without notice. The United States Federal Communications Commission (in 47CFR 15.838) has specified that the following notice be brought to the attention of the users of this product.

Federal Communication Commission Radio Frequency Interference Statement:

"This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturers instructions, may cause interference to radio and television reception. It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However there is no guarantee that interference will not occur in a particular installation. If this equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient the receiving antenna*
- *Relocate the matrix with respect to the receiver*
- *Move the matrix away from the receiver*
- *Plug the matrix into a different outlet so that computer and receiver are on different branch circuits*

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the booklet, How to Identify and Resolve Radio-TV Interference Problems, prepared by the Federal Communications Commission to be helpful."

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock N. 004-000-00345-4.

Use shielded cables. To comply with FCC Class B requirement, all external data interface cables and adapters must be shielded.

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AutoPatch
Statement of Warranty

AutoPatch, a division of X^N Technologies, Inc., Cheney, Washington, warrantees that the products manufactured by AutoPatch will be free of defects in materials and workmanship for the lifetime of the product, subject to the following terms and conditions.

Terms and Conditions

1. AutoPatch products are under warranty for a period of five (5) years following the original sales invoice date. The warranty period may be extended to the life of the product provided the warranty card is filled out and returned to AutoPatch. TO VALIDATE THE LIFETIME WARRANTY: THE AutoPatch WARRANTY CARD MUST BE FILLED OUT BY THE DEALER AND RECEIVED BY AutoPatch WITHIN THIRTY (30) DAYS OF THE INSTALLATION OF EQUIPMENT BUT NO LATER THAN ONE (1) YEAR FROM THE ORIGINAL SALES INVOICE DATE. A warranty certificate will be returned to the dealer to verify the warranty period.

2. This Limited Lifetime warranty covers AutoPatch products shipped on or after October 1, 1997. The Limited Lifetime warranty applies to products in the original installation only. If the product is moved to a different installation, the Limited Lifetime warranty will no longer apply and the product warranty will revert to the original warranty which covers a period of five (5) years following the original sales invoice date.

3. The product lifetime is defined as the period of time from the original sales invoice date to ten (10) years after AutoPatch ceases manufacturing the product model.

4. Warranty repairs are accomplished by returning the subassembly to AutoPatch for repair. If conditions do not permit this procedure, AutoPatch will invoice new or reconditioned (at AutoPatch's option) replacement parts and ship them to the dealer or to the customer if so directed by written order from the dealer. In that case the replacement will be billed to the customer and the customer may return the failed subassembly within 30 days for credit. See "AutoPatch Returns Policy" in this manual for replacement policies and procedures.

5. **AutoPatch's liability and Buyer's remedies under this warranty shall be limited solely to repair, replacement, or credit, at AutoPatch's option.**

6. The AutoPatch warranty does not apply to any AutoPatch product that has been modified, repaired by an unauthorized agent, or improperly installed, used, or maintained. AutoPatch shall not be liable under any circumstances for consequential or incidental damages including, but not limited to, labor costs or loss of profits arising in connection with the use of or inability to use AutoPatch products.

7. AutoPatch will not be responsible for items damaged during shipment to or from AutoPatch. The shipping carrier is responsible for items damaged during shipment.

8. This warranty is exclusive and in lieu of any other warranty, expressed or implied, including but not limited to any implied merchantability or fitness for a particular purpose. The terms of this warranty are governed by the laws of the state of Washington; certain other states restrict warranty limitations. You may have rights that are not defined herein.

9. This warranty may not be modified except in writing by an authorized AutoPatch officer.

Contents

Welcome

Meet the 8Y-XL ii
Meet the Manual iii
Terms to Know iv
Technical Support v

Chapter 1 – Introduction to the 8Y-XL

Front of Enclosure 1-2
Working with the CP-10 Control Panel 1-2
Rear of Enclosure 1-5

Chapter 2 – Executing Switches

Executing Switches Using the CP-10 Control Panel 2-2
Executing Switches Using BCS Commands 2-5

Chapter 3 – Verifying Signal Status

Verifying Signal Status Using the CP-10 Control Panel 3-2
Verifying Signal Status Using BCS Commands 3-4

Chapter 4 – Executing Local Presets

Executing Local Presets Using the CP-10 Control Panel 4-2
Executing Local Presets Using BCS Commands 4-4

Chapter 5 – Disconnecting Switches

Appendix A – AutoPatch Service and Returns Policy

Service A-1
Return Authorizations A-1
Claims for Shipping Damages A-1
Replacement Policies and Procedures A-2
Special Notice A-3

Appendix B – Product Specifications

General B-1

Analog Audio B-2

Standard Audio Boards B-2

Analog Video B-3

Standard Video Boards B-3

Wideband Video Boards B-4

Ultra-wideband Video Boards B-5

Appendix C – BCS (Basic Control Structure) Commands

Glossary

Index

Welcome

Welcome to the *8Y-XL User's Operation Manual*. The User's Operation Manual is the second piece of a three piece documentation set:

Installation and Setup Guide – for the technician installing the system

User's Operation Manual – for the end-user who operates the system

Quick Reference Guide – BCS (Basic Control Structure) and local control panel information for the end-user (a companion to the User's Operation Manual)

The 8Y-XL User's Operation Manual contains quick, easy-to-follow instructions for operating an 8Y-XL Distribution Matrix from both a serial control device that supports BCS (Basic Control Structure) commands and the CP-10 Control Panel.

This manual does not provide information on managing configuration files. (We recommend all system modifications be made only by an installer.) This topic is covered in the "8Y-XL Installation and Setup Guide."

The 8Y-XL User's Operation Manual does not include any detailed information about SBCs (Single Bus Controllers) for the 8Y-XL. Call AutoAssist for more information about this controller type (see Technical Support*, p. v)*.

Meet the 8Y-XL

The 8Y-XL Distribution Matrix is a highly versatile signal switching device that can route audio, video, and digital signals. Each enclosure can have one of many input and output layouts to meet your current signal switching needs, with future upgrade potential.

An 8Y-XL Distribution Matrix can stand alone or comprise a virtually unlimited number of linked enclosures, including any other AutoPatch products with an X^NNet network compatible interface. Each 8Y-XL enclosure can hold up to 8 input and 8 output boards with 8 connectors each, for a total capacity of 64 input and 64 output connectors per enclosure. The 8Y-XL can also be combined with the smaller Modula for unique systems with additional versatility.

The 8Y-XL fits into a broad range of audio/video/data environments and is controllable from a variety of sources, including a CP-10 Control Panel, a CP-10 Remote Control Panel, any control device that can send ASCII characters through an RS232 or RS422 serial cable, a PC, a third party serial controller*, or a chain of Single Bus Controllers*.

Noticeable features of the 8Y-XL include:

- ❑ Mixing audio and video ultra-wideband in a single enclosure
- ❑ Modular in increments of 8 inputs and/or outputs
- ❑ Controllable via Ethernet, Neuron®, RS-232/RS-422, CP-10 Control Panel, and Single Bus Controllers
- ❑ Standard redundant power supplies
- ❑ System self-diagnostics

*These options are not covered in this manual.

Meet the Manual

This manual contains five chapters and three appendices. The information in this manual progresses from introducing the 8Y-XL in Chapter 1 to BCS (Basic Control Structure) commands in Appendix C. Use the following chapter descriptions to guide you through the manual.

Title	Description
Chapter 1 Introduction to the 8Y-XL	➤ Descriptions and illustrations of the front and the rear of a typical 8Y-XL enclosure
Chapter 2 Executing Switches	➤ Directions for executing switches using the CP-10 Control Panel ➤ Directions for executing switches using BCS commands
Chapter 3 Verifying Signal Status	➤ Directions for monitoring the status of signals using the CP-10 Control Panel ➤ Directions for monitoring the status of signals using BCS commands
Chapter 4 Executing Local Presets	➤ Directions for executing local presets using the CP-10 Control Panel ➤ Directions for executing local presets using BCS commands
Chapter 5 Disconnecting Switches	➤ Directions for disconnecting switches using BCS commands
Appendix A AutoPatch Service and Returns Policies	➤ Details regarding AutoPatch Service and Returns Policies
Appendix B Product Specifications	➤ Technical specifications and performance information
Appendix C BCS (Basic Control Structure) Commands	➤ Table of BCS characters (keys), descriptions, and functions
Glossary	➤ Definitions of terms as they are used in this manual
Index	➤ Index of subjects by features and tasks

Terms to Know

Before jumping into the technical details of this manual, you should be familiar with the following terms:

Basic Control Structure (BCS)

BCS is a set of alphanumeric characters that combine to form command lines. Use BCS command lines to control a system from any serial device that allows you to enter characters, such as a PC (personal computer).

CP-10 Control Panel

The CP-10 Control Panel may be attached to each enclosure and is designed for system control of the 8Y-XL Distribution Matrix.

ESD

Electrostatic Discharge (ESD) refers to electrical charges (such as static electricity) that can damage sensitive components inside an enclosure. The graphic to the left of this definition precedes every procedure where ESD damage could occur if you are not properly grounded and not handling components correctly (see the *Caution* page inside the front cover of this manual for more details about ESD).

Input and Output Connectors

Input and output connectors are on the rear of an enclosure. Input and output signal cables attach to the input and output connectors. Standard 8Y-XL audio and data connectors are 3 position terminal block; video and sync connectors are BNC.

Level

A level is a set of input and output signals that are grouped and, therefore, switch together.

Signal

A signal can be analog audio, analog video, serial digital, sync information, or other types. A signal (also called an input or output signal) can comprise a set of connectors whose signals switch together, such as an “RGB” signal. To route a specific input (source) signal to a specific output (destination) device, the input and output must be of the same signal type and must reside in the same level.

Switch

A switch is an active connection between an input (source) signal and one or more output (destination) devices.

X^NNet

X^NNet is an internal communication protocol that requires software driver support for Ethernet and Neuron® interfaces.

Technical Support

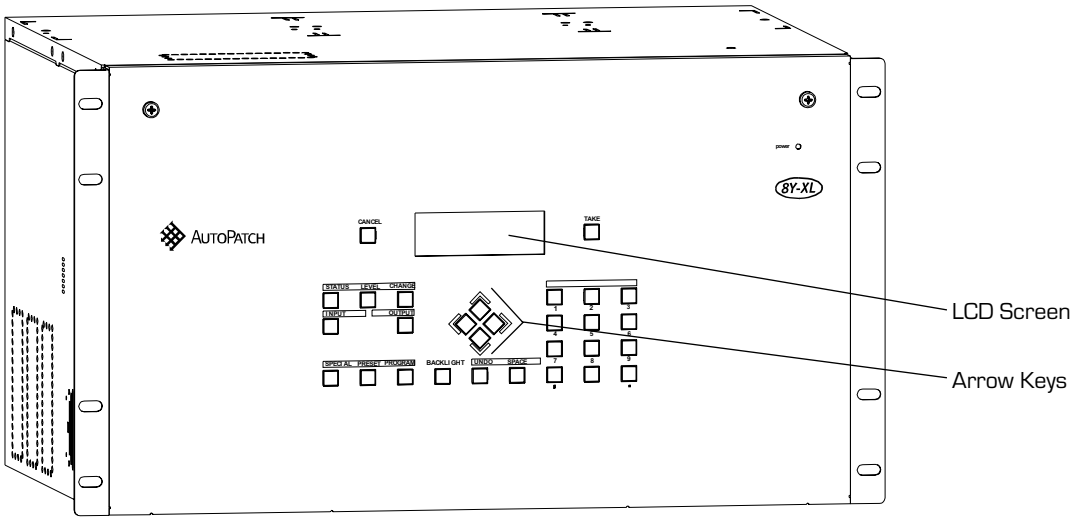
AutoPatch provides technical support 24 hours a day, 7 days a week (except for U.S. holidays). Before calling technical support with a question, please consult the 8Y-XL documentation set. If these manuals cannot fully answer your question, *have your serial number (located on the plate between the input and output connectors on the rear of the enclosure) ready* and call your authorized AutoPatch dealer or call AutoPatch AutoAssist at: (toll free for U.S. and Canada) **800-622-0246** or (international) **509-235-2636**. You can also reach us through our web site: **www.autopatch.com**, or e-mail our AutoPatch Technical Support Specialists at: **support@autopatch.com**.

1 Introduction to the 8Y-XL

An 8Y-XL Distribution Matrix is composed of one or more enclosures. Enclosures are the structural basis of a matrix switcher. Since AutoPatch 8Y-XL Distribution Matrices are custom-built for each installation, factors such as control method and signal types affect the appearance and weight of each enclosure. This chapter describes the following:

- Front of a typical enclosure
- Rear of a typical enclosure

1.1 Front of Enclosure



An 8Y-XL enclosure with a CP-10 Control Panel

An enclosure can have either a blank front panel or a CP-10 Control Panel (a front panel produced by AutoPatch that has an LCD screen and keys for controlling the system's inputs and outputs). Although a CP-10 Control Panel is optional, we recommend one on at least one enclosure in the system for system verification, redundant control, and troubleshooting. With the enclosure's power turned off during installation and removal, the CP-10 Control Panel can be attached as needed and then removed. Anytime you connect a CP-10 Control Panel to a different enclosure, you must restart the entire system to reconfigure the panel.

Working with the CP-10 Control Panel

A CP-10 Control Panel has 29 keys – 10 number keys for entering digits, 4 directional arrow keys, and 1 each of the following: Cancel, Take, Status, Level, Change, Input, Output, Preset, Backlight, Space, Special, Program, Undo, Comma, and Period (the last five are not implemented).

- **To use the CP-10 Control Panel**, use the keys to choose commands and values from the Command Screen.
- **To choose a command,** push the key that corresponds with the one you want to choose.
- **To select values for fields (such as Level, Source, Destination, and Preset values),** use the number keys.

Number Keys (0-9)

Use the number keys to enter digits when choosing front panel menu items (instead of scrolling down the lists), entering input, output, and local preset numbers, and entering digits for any other functions that may require numbers.

Arrow Keys

Use the arrow keys to scroll left and right through long lists of outputs. The arrow keys are required only when an arrow graphic is displayed on the front panel's LCD screen.

Cancel Key

Use the Cancel key to abort a command that is incomplete. If you make a mistake while entering a command, press the Cancel key to remove the partially entered command from the screen and enter the correct command. The Cancel key cannot undo a completed operation.

Take Key

The Take key is much like the Enter or Return key on a computer keyboard. Pressing the Take key tells the system to execute the chosen or entered command.

Status Key

Use the Status key to query the system for signal routing information and switch verification. See Chapter 3 for more information on status operations.

Level Key

The Level key prepares the system to receive a level identification number as the next entry.

Change Key

Use the Change key to switch signals. Press the Change key and the Change menu appears, prompting you for information about the switch you want to perform. See Chapter 2 for more information on executing switches.

Input Key

The Input key prepares the system to receive an input identification number as the next entry.

Output Key

The Output key prepares the system to receive an output identification number as the next entry.

Preset Key

Use the Preset key to implement a local preset. See Chapter 4 for more information on executing presets.

Backlight Key

The Backlight key illuminates the LCD. The backlight remains illuminated for approximately 20 seconds; however, you can turn it off before the 20 seconds are up by pressing the key again.

Space Key

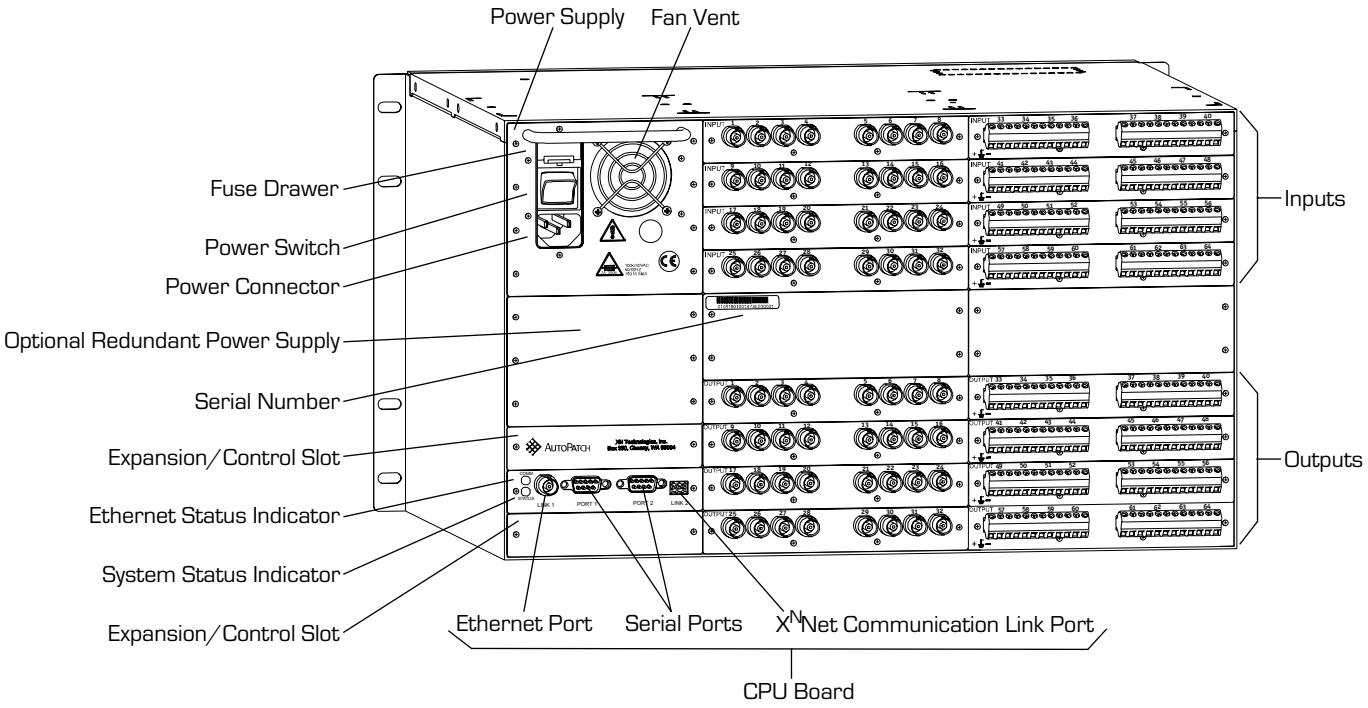
Use the Space key to insert a space between multiple outputs or multiple local presets when entering a command; the output and local preset prompts are the only prompts that accept multiple entries.

Special, Program, Undo, Comma (,), and Period (.) Keys

These keys are not implemented at this time.

1.2 Rear of Enclosure

The rear of the enclosure has the input and output connectors, CPU, expansion/control slots, power supply, and serial number (see graphic below).



The following segments briefly introduce the hardware on the rear of an enclosure.

Input and Output Connectors

Input and output connectors are the attachment points for devices that connect to the system. Input and output connectors are numbered separately. The inputs (sources) are on the top of the enclosure, to the right of the power supply, and the outputs (destinations) are on the bottom of the enclosure, to the right of the CPU. A single enclosure can handle a combination of analog audio, analog video, digital video, and sync signals.

CPU

The CPU is in one of the expansion/control slots to the left of the output connectors and has connectors (ports) for attaching external control devices. The CPU also has a system status light, a network use light (Ethernet Status indicator), and ports for linking to other enclosures.

Expansion/Control Slots

Each enclosure provides three expansion/control slots. One contains the CPU board and two are for future boards that will increase functionality and add new features to your system. One is located above the CPU and one is below it.

Power Supply

The power supply is on the top left corner of the rear of the enclosure. The power supply holds the power switch, power connector, and fuse drawer. The power supply fan vent is to the right of the power supply unit.

The 8Y-XL input voltage range is AC 100-240V single phase. The power supply will accept all major, international power sources (see page B-1).

The fuse drawer is just above the power switch and contains two 2 AMP Time Delay (5mm x 20mm) fuses.

Press the “0” side of the power switch to turn power off; press the “1” side to turn it on.

We recommend surge protectors and/or an AC line conditioner.

Serial Number

The serial number for the system is located on a plate between the input and output connectors.

Executing Switches

Switches connect an input signal from a source device to an output signal(s) that goes to your destination device(s). The signals connected in a switch command are groups of individual signals coming through the connectors on the rear of an enclosure. When executing a switch, you must specify a level that has all the signals you want to route. Level definitions reside in the configuration information in each enclosure's CPU.

You can enter execute switch commands from the following:

- CP-10 Control Panel
- CP-10 Remote Control Panel
- An external serial controller (computer, AMX, Crestron, etc.)* via BCS (Basic Control Structure) commands
- An SBC (Single Bus Controller)

The CP-10 Remote Control Panel works the same as an attached control panel. SBCs are not covered in this manual.

*AutoPatch provides, at no charge, an interface library for various controllers. This library is called the X^NNet Communication Library. This library, documentation, and programming examples are available upon request from your AutoPatch representative.

2.1 Executing Switches Using the CP-10 Control Panel

You can execute switches from the CP-10 Control Panel by using the steps below or by executing a local preset. For information about local presets, see Chapter 4, "Executing Local Presets." BCS (Basic Control Structure) commands can also be used to execute switches (see page 2-5).

The following example switches Input 2 to Output 3 on Level 0.

You can return to the Command screen at any time by pressing the Cancel key.

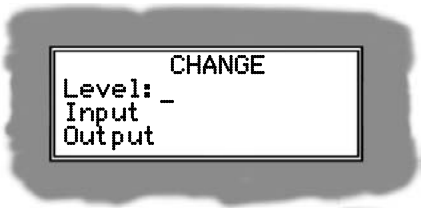
Note: In each switch command, you can enter multiple output signals, but only one input signal and only one level.

To execute a switch using the CP-10 Control Panel:

1. At the Command screen, press the Change key.

The Change screen appears.

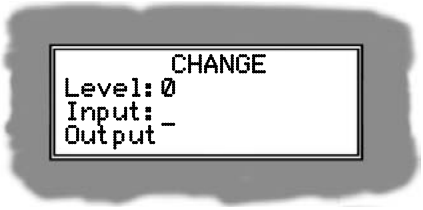
2. Press the Level key.



The cursor appears after the Level prompt.

3. Enter the number of the level where you want the switch to occur.

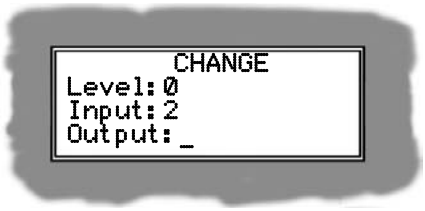
4. Press the Input key.



The cursor appears after the Input prompt.

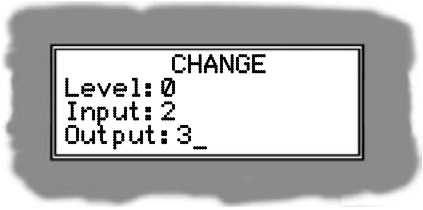
5. Enter the number of the input you want to switch.

6. Press the Output key.



The cursor appears after the Output prompt.

7. Enter the number of the output you want to receive the specified input.



If, at any time, you enter an incorrect number, press the Cancel key and enter the entire sequence again.

Note: If you want to switch an input to a large group of outputs, enter no more than 33 outputs at a time and be sure to press the Space key between each output. If you enter more outputs than can fit on the control panel screen, the Output prompt slides to the left, so the most recent output entered is on the screen.

8. Press the Take key.
   The input is routed to the specified output(s) and the Command screen appears.

Note: To return to the Command screen without executing the switch, press the Cancel key.

2.2 Executing Switches Using BCS Commands

You can only execute switches with BCS commands through a device that can connect to the serial connector on the CPU. The 8Y-XL can be configured for both RS232 and RS422.

Note: In each switch command, you can enter multiple levels and multiple output signals, but only one input signal.

To execute a switch, enter the command using the following command line format, where "#" represents any valid level, input, or output number.

`CL#I#O#T` or `CL#O#I#T`

To cancel an incomplete BCS command, enter the "X" command at any time.

Examples:

BCS Command	Action
`CL1I6O24T`	Switches input 6 to output 24 on Level 1
`CL1I6O2 4 9T`	Switches input 6 to outputs 2, 4, and 9 on Level 1
`CL3O2I5T`	Switches input 5 to output 2 on Level 3
`CL1 2I4O5 6T`	Switches input 4 to outputs 5 and 6 on Levels 1 and 2
`CL2I6X`	Cancels the incomplete command

Note: In each execute switch command, you can enter multiple levels and multiple outputs *by including a space between each set of numbers for levels or outputs*.

The following table shows the BCS command characters (keys) you will use when executing switches. Appendix C gives a complete list of the BCS command characters.

Key	Function	Description
C	Change	Initiates an execute switch command; this must precede the input and output specification
L	Level	Flags the next 1 - 3 digit number as a level specification
"0" - "9"	Number	Identifies inputs, outputs, presets, and levels; combine the digits to form larger numbers
I	Input	Flags the next 1 - 3 digit number as an input specification
O	Output	Flags the next 1- 3 digit number as an output specification **Note:** O is the letter O, not the number zero (0)
" "	Space	Separates numbers in multiple entries
T	Take	Executes a command
X	Exit	Exits, or cancels, the command being entered

Verifying Signal Status

Verify the status of a signal to confirm that the switch has executed properly.

You can enter commands to verify signal status from the following:

- CP-10 Control Panel
- CP-10 Remote Control Panel
- An external serial controller (computer, AMX, Crestron, etc.)* via BCS (Basic Control Structure) commands
- An SBC (Single Bus Controller)

The CP-10 Remote Control Panel works the same as an attached control panel. SBCs are not covered in this manual.

*AutoPatch provides, at no charge, an interface library for various controllers. This library is called the X^NNet Communication Library. This library, documentation, and programming examples are available upon request from your AutoPatch representative.

3.1 Verifying Signal Status Using the CP-10 Control Panel

Input status and Output status both function on the CP-10 Control Panel and in BCS commands (see page 3-4). You can return to the Command screen at any time by pressing the Cancel key.

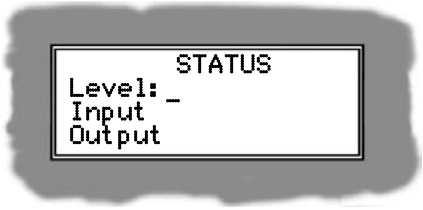
The following example verifies signal status for input 2 on level 0.

To verify input signal status using the CP-10 Control Panel:

1. At the Command screen, press the Status key.

The Status screen appears.

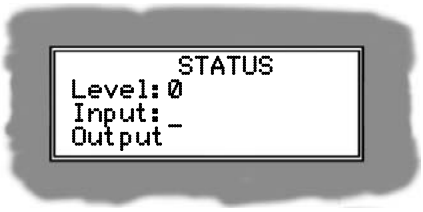
2. Press the Level key.



The cursor appears after the Level prompt.

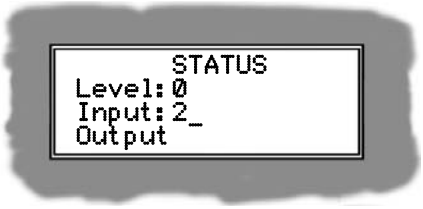
3. Enter the number of the Level where the input is connected.

4. Press the Input key.

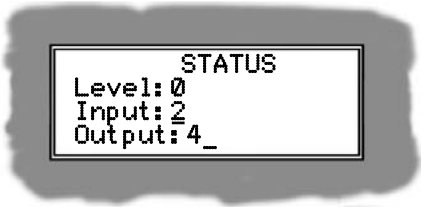


The cursor appears after the Input prompt.

5. Enter the number of the input you want to check.



6. Press the Take key.



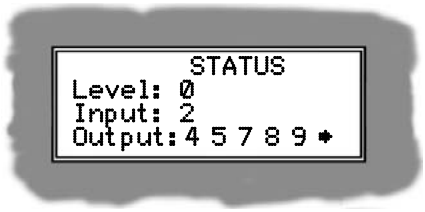
The output status for the selected input is displayed. Multiple outputs may also be displayed (for an example of a screen displaying multiple outputs, see page 3-4).

Note: If no outputs are routed to the selected input, "DIS" appears in the Output field.

7. Press the Cancel key.
   The Command screen appears.

Note: Repeat this procedure for each signal status you want to verify.

The screen below shows an example of a multiple output display. When the screen does not have enough room to show all the outputs that the input is connected to, scroll right using the right arrow key to see the rest.



Use the right Arrow key to display additional outputs

3.2 Verifying Signal Status Using BCS Commands

You can verify the status of signals from an external control device that connects to one of the RS232 connectors on the CPU.

To verify signal status, enter the command using the following command line format, where "#" represents any valid level, input, or output number.

`SL#O#T` or `SL#I#T`

To cancel an incomplete BCS command, enter the "X" command at any time.

The results of the BCS command will display in parentheses (see table below); ( ) indicates that no inputs are routed to the output being verified, or that no outputs are routed to the input being verified.

Examples:

BCS Command	Action	Signal Reply
SL3O4T	Returns the status for output 4 on Level 3	SL3O4T(6)
SL0I4T	Returns the status for input 4 on Level 0	SL0I4T(2 7 8 11)
SL1O32T	Returns the status for output 32 on Level 1	SL1O32T( )
SL2O7X	Cancels the incomplete command	SL2O7X

The following table shows the BCS command characters (keys) used to verify switches. Appendix C gives a complete list of the BCS command characters.

Key	Function	Description
S	Status	Initiates verification of signal status; this must precede the level, input, and output specifications
L	Level	Flags the next 1 - 3 digit number as a level specification
"0" - "9"	Number	Identifies inputs, outputs, presets, and levels; combine the digits to form larger numbers
I	Input	Flags the next 1 - 3 digit number as an input specification
O	Output	Flags the next 1 - 3 digit number as an output specification **Note:** O is the letter O, not the number zero (0)
T	Take	Executes a command
X	Exit	Exits, or cancels, the command being entered

Executing Local Presets

A local preset is a set of switches stored in each enclosure's configuration information. You can execute a local preset at any time. Local presets are not programmed when we ship your system, so before executing any, contact your AutoPatch dealer to program them. An 8Y-XL can store hundreds of local presets. You can enter commands to execute Local Presets from the following:

- CP-10 Control Panel
- CP-10 Remote Control Panel
- An external controller (computer, AMX, Crestron, etc.)* via BCS (Basic Control Structure) commands

The CP-10 Remote Control Panel works the same as an attached control panel.

*AutoPatch provides, at no charge, an interface library for various controllers. This library is called the X^NNet Communication Library. This library, documentation, and programming examples are available upon request from your AutoPatch representative.

4.1 Executing Local Presets Using the CP-10 Control Panel

You can execute local presets on your system at any time using either the CP-10 Control Panel or BCS commands (see page 4-4). Your system is shipped without programmed local presets, so ask your AutoPatch dealer to program these into your system.

Multiple local presets can be executed simultaneously using the CP-10 Control Panel.

You can return to the Command screen at any time by pressing the Cancel key.

The following steps execute Local Preset 6 on Level 1.

Note: When you execute a local preset, the system executes the switches immediately.

To execute a local preset using the CP-10 Control Panel:

1. At the Command screen, press the Preset key.

The Local Preset screen appears.

2. Press the Level key.

The cursor appears after the Level prompt.

3. Enter the Level for the local preset you want to execute.

4. Press the Preset key.

The cursor appears after the Execute prompt.

5. Enter the number for the local preset you want to execute. (If you need to execute multiple presets, separate them with a space by pressing the Space key).

Caution: Make sure all the presets are in the same level when selecting multiple presets.

6. Press the Take key.
   The Local Preset 6 is executed and the Command screen appears.

Note: To return to the Command screen without executing the local preset, press the Cancel key.

4.2 Executing Local Presets Using BCS Commands

You can execute local presets through a device that connects to one of the RS232 connectors on the CPU.

To execute a local preset, enter the command using the following command line format, where "#" represents any valid preset ID number.

`RL#P#T or RL#P# #T`

To cancel an incomplete BCS command, enter the "X" command at any time.

Examples:

BCS Command	Action
RL0P2T	Executes local preset 2 on Level 0
RL1P12T	Executes local preset 12 on Level 1
RL4P1 2T	Executes local presets 1 and 2 on Level 4
RL3P6T	Executes local preset 6 on Level 3
RL3PX	Cancels the incomplete command

Note: In each "execute local preset" command, you can enter multiple local presets by including a space between each preset number. You can enter only one level.

The following table shows the BCS command characters (keys) used to execute local presets. Appendix C gives a complete list of the BCS command characters.

Key	Function	Description
R	Global Preset	Initiates an execute global preset or execute local preset command **Note:** Global presets are not implemented at this time
P	Local Preset	Flags the next 1 - 3 digit number as a local preset number
L	Level	Flags the next 1 - 3 digit number as a level specification
"0" - "9"	Number	Identifies inputs, outputs, presets, and levels; combine the digits to form larger numbers
" "	Space	Separates numbers in multiple entries
T	Take	Executes the preset command; a "T" must follow each preset command before another can be initiated
X	Exit	Exits, or cancels, the command being entered

Disconnecting Switches

Disconnecting a switch removes an input signal from one or more output devices. You can disconnect a single switch on one level with one command; however, you cannot disconnect all signals on a single level with one command.

You can disconnect switches only from the following:

- An external serial controller (computer, AMX, Crestron, etc.)* via BCS (Basic Control Structure) commands
- An SBC (Single Bus Controller)

SBCs are not covered in this manual.

*AutoPatch provides at no charge, an interface library for various controllers. This library is called the X^NNet Communication Library. This library, documentation, and programming examples are available upon request from your AutoPatch representative.

You can disconnect switches through a device that can connect to one of the RS232 connectors on the CPU.

Caution: Disconnecting an input disconnects *all* the outputs receiving that input signal.

To disconnect a switch, enter the command using the following command line format, where "#" represents any valid level, input, or output number.

```
DL#O#T or DL#I#T
```

To cancel an incomplete BCS command, enter the "X" command at any time.

Examples:

BCS Command	Action
DL0O3T	Disconnects output 3 on Level 0
DL1O6 8 21T	Disconnects outputs 6, 8, and 21 on Level 1
DL2I5T	Disconnects *all* outputs connected to input 5 on Level 2
DL3I7 9 15T	Disconnects *all* outputs connected to inputs 7, 9, and 15 on Level 3
DL3OX	Cancels the incomplete command

Note: In each disconnect switch command, you can enter multiple inputs or outputs by including a space between each input or output number.

The following table shows the BCS command characters (keys) used to disconnect switches. Appendix C gives a complete list of the BCS command characters.

Key	Function	Description
D	Disconnect	Initiates a disconnect switch command
L	Level	Flags the next 1 - 3 digit number as a level specification
"0" - "9"	Number	Identifies inputs, outputs, presets, and levels; combine the digits to form larger numbers
I	Input	Flags the next 1 - 3 digit number as an input specification
O	Output	Flags the next 1 - 3 digit number as an output specification **Note:** O is the letter O, not the number zero (0)
" "	Space	Separates numbers in multiple entries
T	Take	Executes a command
X	Exit	Exits, or cancels, the command being entered

AutoPatch Service and Returns Policy

A.1 Service

The AutoPatch 8Y-XL is to be serviced only by AutoPatch authorized service agents.

Return Authorizations

Except for warranty claims, merchandise will not be accepted for return or exchange after the first thirty (30) days following the invoice date.

Returned items must be shipped prepaid and insured in their original packing containers (if possible). When returning merchandise, clearly show the Return Materials Authorization (RMA) number on the outside of each carton. Merchandise will not be accepted for any reason without an RMA number.

Products and parts returned or exchanged for any reason other than warranty purposes are subject to a restocking fee not greater than twenty percent (20%) of the invoiced price, if returned in unused condition.

Claims for Shipping Damages

Unless otherwise specified, merchandise is normally shipped by Federal Express Economy service; however, AutoPatch reserves the right to select the final method and carrier for any shipment.

Although we take special care to ensure the safe arrival of all orders, shipping accidents and damage can occur. Shipments are transferred to the appointed carrier in good condition, and AutoPatch's liability for the product ceases when the transfer to the carrier is complete. Therefore, claims for damages and shortages must be filed with the transporting

company by the receiving company within fifteen (15) days of receipt. Visible damage and shortages must be noted on the freight bill; packaging and contents must be retained for inspection.

A.2 Replacement Policies and Procedures

During the warranty period:

1. Describe the problem to an AutoPatch dealer, regional representative, or the AutoPatch customer service department.
2. Upon verification of a problem that requires factory repairs, an AutoPatch customer service representative will issue a Return Materials Authorization (RMA) number, and we will, at no cost, repair or replace the part(s) returned to the factory and return the part(s) to the sending party. If conditions do not permit this procedure, we will invoice new or reconditioned (at AutoPatch's option) replacement part(s) to the dealer and ship the part(s) to the dealer or to the consumer if so directed by written order from the dealer. Unless otherwise instructed in writing by an *AutoPatch* customer service representative, part(s) replaced under this warranty must be returned to the factory:

   a) within thirty (30) days;

   b) with shipping and insurance costs prepaid;

   c) with the RMA number clearly indicated on the outside of each container;

   d) in the original shipping container(s), if possible;

   e) with a written description of problem.

   If the replaced part(s) are returned within thirty (30) days, we will apply credit to the dealer's account for the total value of part(s) determined defective, plus return shipping costs. Any part(s) received after thirty (30) days or otherwise not in compliance with these requirements may be refused, and credit will not be issued.
3. Repaired or replaced part(s) will be warranted for the remainder of the original system warranty period for the first thirty (30) days following the invoice date, or we will extend the original warranty period by the period of verifiable downtime, whichever provides the greatest benefit.

Following warranty expiration:

1. Call your AutoPatch dealer, area representative, or the AutoPatch customer service department with a description of the problem.
2. Upon verification of a problem that requires factory repairs, an AutoPatch customer service representative will issue a Return Materials Authorization (RMA) number. We will, at nominal cost, invoice the sending party, repair or replace the part(s) returned to the factory and return those part(s) to the sending party. If conditions do not permit this procedure, we will invoice and ship new or reconditioned (at AutoPatch's option) replacement part(s) to the dealer or to the consumer if so directed by written order from the dealer.
3. Post warranty repairs and replacements are warranted for the first thirty (30) days following invoice date.

A.3 Special Notice

AutoPatch reserves the right to modify or discontinue designs, specifications, warranties, and policies without notice. All data with regard to model numbers series, specifications, and prices in our literature have been thoroughly reviewed and edited. Although we cannot assume responsibility for inadvertent omissions or errors, we sincerely apologize if misunderstandings occur, and we appreciate your criticism, corrections, and suggestions.

Product Specifications

The following pages contain performance specifications for your AutoPatch 8Y-XL Distribution Matrix. The AutoPatch web site (www.autopatch.com) also has a full list of specifications for all AutoPatch products.

A.1 General

AC Power	100 - 240 V single phase
Frequency	47 - 63 Hz
Humidity	0 to 90% non-condensing
Dimensions	13.5 in. (34.29 cm) depth 17.5 in. (44.5 cm) width without mounting ears 19.0 in. (48.26 cm) width with mounting ears 10.37 in. (26.34 cm) or 6 RU height
Weight	Approximately 17 lb. (7.73 kg)
Fuse	2 Amp time lag (5 x 20 mm)

A.2 Analog Audio

Standard Audio Boards

Throughput

Parameter	Conditions	Value
Frequency Response	(20 Hz to 20 kHz)	<±0.1 dB
Gain Flatness	(20 Hz to 20 kHz) (20 Hz to 100 kHz)	0.01 dB 0.1 dB
THD + Noise	Vin=-3.3 dBu to 13.2 dBu f=20 Hz to 20 kHz	<.01%
Signal to Noise Ratio (S/N)	Vin=13.2 dBu, 20 Hz to 20 kHz	-103 dB
Adjacent Crosstalk	f=1 kHz, Vin= 24 V	<-95 dB
Power Supply Rejection Ratio	Vs= 15 V	-80 dB (Typ) -60 dB (Min)

Input

Parameter	Conditions	Value
Level (maximum)	Common Mode Differential	19.4 dBu 4 36.1 dBu
Impedance		18 k
Type		Balanced or Unbalanced
CMRR	VCM= 10 V, 20 Hz to 20 kHz	-90 dB (Typ) -70 dB (Min)
Gain Control Range	Vin=3 Vp-p	-3 to +10 dB
Connector Type		Pluggable 3 Position Screw Terminal

Output

Parameter	Conditions	Value
Level (headroom)		28 dBu
Impedance		50
Type		Balanced or Unbalanced
Gain Control Range		-3 to +10 dB
Connector Type		Pluggable 3 Position Terminal Block

A.3 Analog Video

Standard Video Boards

Throughput

Parameter	Conditions	Value
Bandwidth (1 dB)	Vin= 1 V	12 MHz (1:ALL)
Bandwidth (3 dB)	Vin= 1 V	30 MHz (1:ALL)
Differential Gain	f=3.58 MHz	0.1% or Better
Differential Phase	f=3.58 MHz	0.1 or Better
Signal to Noise Ratio (S/N)	Vin=+0.7 V	-73 dB
Crosstalk (adjacent channel)	f=5 MHz	<-60 dB
Time Delay	Vin= 0.5 V square wave	<20 ns

Input

Parameter	Conditions	Value
Level (maximum)		5 V
Impedance		75 or Hi-Z (22 k)
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Output

Parameter	Conditions	Value
Level (maximum)		5 V
Impedance		75
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Wideband Video Boards

Throughput

Parameter	Conditions	Value
Bandwidth (3 dB)	Vin= 1 V	250 MHz (1:ALL)
Signal to Noise Ratio (S/N)	Vin=0.7 V (100% IRE)	<-70 dB
Crosstalk (adjacent channel)	f=5 MHz	<-60 dB
Time Delay	Vin= 0.5 V square wave	<20 ns

Input

Parameter	Conditions	Value
Level (maximum)		2 V
Impedance		75 or Hi-Z (22 k)
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Output

Parameter	Conditions	Value
Level (maximum)		2 V
Impedance		75
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Ultra-Wideband Video Boards

Throughput

Parameter	Conditions	Value
Bandwidth (3 dB)	Vin= 1 V	400 MHz (1:ALL)
Signal to Noise Ratio (S/N)	Vin=0.7 V (100% IRE)	<-70 dB
Crosstalk (adjacent channel)	f=5 MHz	<-60 dB
Time Delay	Vin= 0.5 V square wave	<20 ns

Input

Parameter	Conditions	Value
Level (maximum)		2 V
Impedance		75 or Hi-Z (22 k)
Gain Control Range		-3 to +10 dB
Connector Type		BNC

Output

Parameter	Conditions	Value
Level (maximum)		2 V
Impedance		75
Gain Control Range		-3 to +10 dB
Connector Type		BNC

BCS (Basic Control Structure) Commands

BCS is a set of alphanumeric characters that allows a PC or other control device to send commands to the system serially. When using a PC to control the 8Y-XL, use serial software, such as Windows95 HyperTerminal, to establish communication. Command lines are not case-sensitive.

The following table shows BCS command characters (keys), their functions, and short descriptions of their functions.

Key	Function	Description
C	Change	Initiates an execute switch command
L	Level	Flags the next 1 - 3 digit number as a level number
"0" - "9"	Number	Identifies inputs, outputs, presets, and levels; combine the digits to form larger numbers
I	Input	Flags the next 1 - 3 digit number as an input specification
O	Output	Flags the next 1 - 3 digit number as an output specification **Note:** O is the letter O, not the number zero (0)
" "	Space	Separates numbers in multiple number entries
T	Take	Executes a command
X	Exit	Exits, or cancels, the command being entered
S	Status	Initiates verification of the status of input and output connections
D	Disconnect	Initiates a disconnect switch command
R	Global Preset	Initiates an execute global preset or execute local preset command **Note:** Global presets are not implemented at this time
P	Local Preset	Flags the next 1 - 3 digit number as a local preset number

Glossary

A

ASCII (American Standard Code for Information Interchange)
A code for representing alphanumeric information.

B

Backlight
The light that illuminates the LCD screen of the control panel on the enclosure. Activate the backlight by pressing the Backlight key on the control panel.

BAUD
The speed at which communications travel through the serial connector. The 8Y-XL can send and receive communications at 9600 (default), 19200, 38400, and 57600.

BCS (Basic Control Structure)
A set of alphanumeric characters that combine to form command lines. BCS command lines can be used to control a system from any serial device that allows you to enter characters, such as a PC (personal computer).

C

Command Line
A set of BCS (Basic Control Structure) command characters that constitute a command recognized by the CPU.

Configuration File
A text file containing system configuration information referenced by each enclosure's CPU during any type of switch operation.

CP-10 Control Panel
An optional panel on the front of the enclosure with an LCD and keys for entering commands. The CP-10 Control Panel is designed for system control of the 8Y-XL Distribution Matrix.

CPU (Central Processing Unit)
Receives, interprets, and executes commands from the user through the user interface (the CP-10 Control Panel or other control device).

D

Distribution Matrix
(see matrix switcher)

E

Enclosure
The metal chassis that holds input and output boards, a CPU board, and a power supply. Each 8Y-XL enclosure can contain up to 8 input and 8 output boards, providing a total capacity of up to 64 input and 64 output signal paths.

ESD (Electrostatic Discharge)
Electrical charges (such as static electricity) that can damage sensitive components inside an enclosure. ESD damage could occur if you are not properly grounded and not handling components correctly (see the *Caution* page inside the front cover of this manual for more details about ESD).

Expansion/Control Slots
Two empty slots on the rear of an enclosure for future boards that will increase functionality and add new features to your system. One is located above the CPU and one is below it.

External Controller
Any device that can control the matrix switcher via the serial connector.

I

Input and Output Connectors
Attachment points on the rear of an 8Y-XL enclosure for devices that connect to the system. Input and output signal cables attach to the input and output connectors. Standard 8Y-XL audio and data connectors are 3 position terminal block; video and sync connectors are BNC.

Input Board
A circuit board that receives video, audio, or data signals from outside sources.

L

LCD (Liquid Crystal Display)
The screen on the CP-10 Control Panel for user interaction.

Level
A set of input and output signals that are grouped and, therefore, switch together. In a configuration file, a level is referred to as a "virtual matrix."

Local Preset
A pre-defined set of signal routings that can be executed at any time. Presets are defined in the configuration file.

M

Matrix Switcher
The hardware and software necessary to switch signals. Matrix switchers are also known as routing switchers or routing matrices.

O

Output Board
A circuit board that routes input signals to specified destinations.

Output Connectors
(see Input and Output Connectors)

P

Power Supply
Contains a power switch, a power connector, the fuse drawer, and the main power supply fan vent.

S

SBC (Single Bus Controllers)
Devices for controlling the input to a specified output device. For more information see the SBC documentation.

Serial Connector
A 9-pin female connector on the rear of an enclosure used to connect serial external control devices to the matrix switcher.

Serial Controller
An external controller that communicates with the matrix switcher via a serial cable.

Signal
A set of connectors whose signals switch together. The signal may contain audio, video, data, or sync information.

Single Bus Controller
(see SBC)

Switch
An active connection between an input (source) signal and one or more output (destination) devices.

V

Virtual Matrix
A set of virtual inputs and outputs (or source and destination channels) in which aggregate signals (such as RGBHV) are grouped into a single channel to permit simultaneous switching of the component signals (R, G, B, H, and V). Virtual matrices are also referred to as levels.

X

X^NNet
An internal communication protocol that requires software driver support for Ethernet and Neuron® interfaces.

Index

A

AC line conditioner 1-6

AC power B-1

arrow keys 1-3

audio

- board specifications B-2
- board, *illus.* 1-5
- connectors iv

AutoAssist v

B

Backlight key, CP-10 1-2, 1-4

BCS (Basic Control Structure)

- command characters (keys) C-1
- definition iv
- disconnecting switches 5-2
- executing local presets 4-4 to 4-5
- executing switches 2-5 to 2-6
- table of command characters (keys) C-1
- verifying signal status 3-4 to 3-5

boards

- capacity ii
- *see also* connectors

buttons (keys)

- *see* CP-10 Control Panel

C

Cancel key, CP-10 1-3

Caution

- disconnecting inputs 5-2
- multiple presets 4-3

Change key, CP-10 1-2, 1-4

chapter descriptions iii

Comma (,) key, CP-10 1-2, 1-4

command line format

- *see* BCS (Basic Control Structure)

Command screen 1-3, 2-2, 3-2, 4-2

- *see also* LCD screen

connectors (input, output)

- definition iv
- *illus.* 1-5

control options ii

CP-10 Control Panel

- definition iv
- directions for using 1-3
- executing local presets 4-2
- executing switches 2-2
- *illus.* 1-2
- verifying signal status 3-2

CPU (Central Processing Unit) 1-6

D

dimensions, enclosure B-1

disconnecting switches

- *Caution* 5-2
- using BCS commands 5-2

E

Electrostatic Discharge

see ESD

e-mail, technical support v

enclosure

connector capacity ii
dimensions B-1
front view, *illus.* 1-2
rear view, *illus.* 1-5
weight B-1

ESD (Electrostatic Discharge) iv

executing local presets

Caution 4-3
programming 4-1
using BCS commands 4-4 to 4-5
using CP-10 Control Panel 4-2 to 4-4

executing switches

using BCS commands 2-5 to 2-6
using CP-10 Control Panel 2-2 to 2-4
see also executing local presets

expansion/control slots 1-6

external control options ii

F

features, 8Y-XL ii

frequency B-1

front of enclosure, *illus.* 1-2

fuse

location 1-6
specifications B-1

H

humidity B-1

HyperTerminal, Windows95 C-1

I

input connectors

definition iv
illus. 1-5

Input key, CP-10 1-2, 1-4

K

keys, CP-10 Control Panel 1-2 to 1-4

L

LCD screen

backlight key 1-4
illus. 1-2

level

definition iv
specify for preset 4-3
specify for status check 3-2
specify for switch 2-1

Level key, CP-10 1-2, 1-3

lights

see indicators

local presets

see executing local presets

M

manual overview iii

N

number keys, CP-10 1-3

O

output connectors

definition iv
illus. 1-5

Output key, CP-10 1-2, 1-4

P

performance specifications B-1

Period key (.), CP-10 1-2

ports 1-6

power connector 1-6

power switch 1-6

Preset key, CP-10 1-2, 1-4

presets

see executing local presets

product specifications

see specifications

Program key, CP-10 1-2, 1-4

R

rear of enclosure, *illus.* 1-5

replacement policies and procedures A-2
return authorizations A-1
returning equipment A-1
RMA (Return Materials Authorization) A-1

S

serial connectors
    illus. 1-5
serial number 1-6
serial ports
    location, *illus.* 1-5
service and returns policy A-1 to A-3
shipping, damage claims A-1
signal
    definition iv
signal status
    see verifying signal status
Space key, CP-10 1-2, 1-4
Special key, CP-10 1-2, 1-4
Special Notice A-3
specifications
    AC power B-1
    audio, standard B-2
    dimensions B-1
    frequency B-1
    fuse B-1
    humidity B-1
    video, standard B-3
    video, ultra-wideband B-5
    video, wideband B-4
    weight B-1
Status key, CP-10 1-2, 1-3
status, signal
    see verifying signal status
surge protectors 1-6
switch
    definition v
    see also disconnecting switches
    see also executing local presets
    see also executing switches
sync
    connectors iv
    signals iv, 1-5

T

Take key, CP-10 1-3
Technical Support v
terms to know iv

U

Undo key, CP-10 1-2, 1-4

V

verifying signal status
    using BCS commands 3-4 to 3-5
    using CP-10 Control Panel 3-2 to 3-4
video
    board specifications B-3
    board, *illus.* 1-5
    connectors iv

W

warranty repair/replacement information A-1 to A-3
    Special Notice A-3
web site v
weight, enclosure B-1

X

X^NNet
    connectors, location 1-5